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Supporting your instrument in a body-friendly manner : a comparative approach

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SUPPORTING YOUR INSTRUMENT IN A BODY-FRIENDLY MANNER:
A COMPARATIVE APPROACH

A Monograph

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Musical Arts

in

The School of Music

by

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May 2014

To my husband,
LLOYD LUCIEN THOMAS

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ABSTRACT

The purpose of this monograph was two-fold: (1) to bring together a scattered array of literature about performance injury prevention (related to violin/viola support) into one source, organize and synthesize this literature with the intention of identifying principal issues, compare coverage and recommendations, and identify consistencies and inconsistencies; and (2) to assess the perceptions of upper string musicians and teachers about injury prevention in the context of the literature. For the first purpose, a comprehensive bibliography of relevant literature was developed. For the second purpose, a survey based on information revealed through the literature was developed and distributed. Total respondents ($N = 61$) divided as follows: college professors ($n = 20$), teachers of pre-college string students ($n = 27$), and college violin and viola majors ($n = 14$). The research question was answered by comparing perspectives from the literature to respondents' perspectives.

Five principal issues were identified: medical problems; general considerations; customizing instrument placement; customizing shoulder rests; customizing chin rests. Their coverage was extensive in most sources. Consistencies were revealed regarding the majority of the issues. Inconsistencies were revealed relative to customizing shoulder rests and chin rests. Generally, between literature and survey there was more consistency than expected; in most areas, respondents seem to be aware of problems and possible solutions. Inconsistency was found in details regarding head positioning, and the specific approach used to customize. Based on the results of this study, it was recommended that performance injury and its prevention receive formal, targeted attention in the college curricula of music majors—especially string players and prospective string teachers; that chin rests be sold separately from instruments; that

string players' and teachers' training include field experiences exposing setup challenges among a variety of student musicians—challenges possibly requiring astute observation, critical thinking, and problem solving; that teachers of large string groups find ways of making meaningful contact with individual students, to remediate setup. Future research might investigate how performers and teachers actually use their knowledge and beliefs in personal practice and in the teaching of students.

CHAPTER 1 INTRODUCTION

Background of the Study

It is common, both among musicians and among laypersons, to think of musical performance only from the standpoint of the aesthetic, emotional, intellectual, and spiritual aspects that the performer is striving to convey to the audience, and to forget that music-making involves an important physical component. As Alexander Technique teachers Barbara Conable and William Conable state, “the best secret kept among instrumentalists is that they move for a living;”¹ therefore, performers need to take into account their physical conditioning the same way that athletes do. Unfortunately, some musicians experience performance-related injuries before they realize the importance of this physical aspect. These injuries are sometimes so severe that they cause the musicians to discontinue practicing and performing for a period of time, and in some cases their careers are curtailed. Deleterious economic, social, and psychological effects are not uncommon. The resulting frustration is due to the fact that most performers have started their training at a young age, and music-making has become a relevant part of their identity.² Recently, awareness of these issues among musicians has increased, especially due to the field of performing arts medicine; however, the knowledge of these problems needs to be available on a larger scale.

My personal story reveals that I was one of these musicians unaware of the importance of the physical aspect of music performance. During my first year of doctoral studies, I sustained an

¹ Barbara Conable and William Conable, *How to Learn the Alexander Technique: A Manual for Students*, 3rd ed. (Portland, OR: Andover Press, 1995), 132.

² Eckart Altenmüller and Hans-Christian Jabusch, “Chronische Schmerzen beim Musizieren” [Chronic pain while music-making], *Das Orchester* 7 (8/04): 20.

injury in my left hand, which might have been influenced by many factors not related to playing technique, such as not stopping from practice when my body felt tired, but also by aspects concerning playing technique per se. I had developed numerous tension habits in my playing, of which I was unaware. One of them was due to a detrimental setup of my instrument. Violins and violas, termed in this paper “upper string instruments,” need to be supported between the player’s chin (or jaw) and left shoulder (or collarbone). The height of a violin or viola is significantly shorter than the average human neck. Therefore, to bridge the gap between these anatomical structures, most players use a chin rest on top of the instrument, and some players use a device underneath the instrument, such as a folded cloth or a commercially available shoulder rest. The combination between these two elements (chin rest and shoulder rest), or the absence of one of them, or even the absence of both, will be termed in this monograph as *support* for upper string instruments (in some sources it is referred to as *setup*). In my case, the chin rest had an uncomfortable shape, therefore forcing my neck into a tensed position.

When I started experiencing discomfort, I did not seek medical attention and I did not stop playing right away, because, in my opinion, this would have been a sign of weakness, and I refused to admit that I might be at risk for a serious problem. Previously, I had scheduled numerous playing commitments, and I did not want to cause inconveniences for anybody by cancelling those performances. When I finally sought medical help, I was advised to rest, and I was prescribed a splint, anti-inflammatories, and physical therapy. I stopped playing for about three months; I felt better, but when I resumed playing, the pain reappeared. In hindsight, it seems that the pain had been become chronic, because of not having sought medical attention (and stopped playing) in a timely manner.³ During the subsequent few years, I saw numerous

³ Altenmüller and Jabusch, 21.

doctors, but it seemed that I was improving only very little. Due to the pain, I had to stop playing for all these years: I only played in an orchestra where it was difficult to cancel my playing commitment, and in lessons with my students (for demonstrating), but it was not possible to engage in the amount of practice required to prepare my doctoral recitals. Only recently I have been able to resume playing at that level, and to play these recitals.

The example of my situation illustrates the fact that to prevent is easier than to cure, and it is especially important to prevent faulty postures in musicians from a young age, in order to eliminate the danger of injury as soon as possible. Teaching violin to students of various ages and levels has sparked my interest in researching what a teacher can do to minimize the likelihood of injury. There are aspects that clearly cannot be influenced by teaching (i.e. delicate body build), but numerous factors can be prevented through a teaching approach that takes into account the physical needs of a student, such as an appropriate support for the instrument (i.e. a chin rest that matches the student's jaw shape). Moreover, I have studied the Alexander Technique for several years; one of the central ideas of this approach is that a musician's basic posture (in Alexandrian terms, "the Use of the Self")⁴ should not be compromised when playing an instrument. Performers are encouraged to bring the instrument to themselves, as opposed to bringing themselves to the instrument.⁵ This idea applies to modifying the two support devices for upper string instruments: the chin rest and the shoulder rest, in a way that they fit the individual. A teacher needs to devote ongoing attention across time to this issue, as opposed to only at the first few lessons, when addressing the basics of violin positioning. Young students

⁴ Patricia O'Neill, Professor of Voice, Certified Alexander Technique Teacher, School of Music, Louisiana State University, Baton Rouge, LA. Interview by Emanuela Lacraru, February 10 2009.

⁵ Ibid.

grow quickly, and their support system might need to be adjusted or changed often. Moreover, teachers should become aware of more options available, as opposed to merely recommending a shoulder rest for a long-necked student, and the approach of not using a shoulder rest for short-necked students. This applies especially to the chin rest, since the apparent “convenience” of having this device included with the instrument might actually result in a lack of concern about possibly changing this device, and only thinking about the shoulder rest when addressing instrument support.

Brief Historical Overview of Chin and Shoulder Rest Development

Since the present study is based on a comparative, rather than a historical, approach, this section will not include a comprehensive discussion of historical sources; it will provide general information about how support for upper string instruments evolved throughout history.

The first time that the violin was mentioned in a treatise was in 1556.⁶ During the sixteenth century, the violin was held against the player’s chest or neck, but not anchored under the chin; this manner of supporting the instrument was deemed sufficient because left-hand mobility (for instance, downward shifting, which is the skill demanding the most support from the player’s head)⁷ was not required by the repertoire to the same extent as today.⁸

In the early seventeenth century, players started showing a preference for placing the instrument on the shoulder, or on the collarbone against the neck. The main support was

⁶ Richard Gwilt, “Holding the Baroque Violin; Part II- The Sources,” *Traditions of Baroque Violin Playing*, 2011, accessed March 3, 2014, <http://www.baroque-violin.info/vhold2.html>.

⁷ Yehudi Menuhin, *Violin: Six Lessons with Yehudi Menuhin* (New York: The Viking Press, 1972), 53.

⁸ Werner Bachmann, *Die Anfänge des Streichinstrumentenspiels* [The beginnings of the playing of stringed instruments] (Leipzig: VEB Breitkopf & Härtel Musikverlag, 1964), 103.

provided by the left hand, the left arm was leaning against the torso, and the scroll was pointing towards the floor; shifting down was accomplished by skillful “manipulation of thumb and wrist.”⁹ Later in the seventeenth century, the need to use the player’s chin to stabilize the instrument in order to facilitate downward shifts was mentioned in Prinner’s treatise of 1677.¹⁰ At that time, the chin rest had not been invented, and players usually placed the chin to the right of the tailpiece.

In the eighteenth century, more players used the chin as a source of support; in a 1756 treatise, Leopold Mozart criticized the manner of supporting the violin on the chest, only with the left hand. He believed that it was easier for the player to place the violin on the front part of the shoulder, so that the E-string side was under the chin, which could be used to stabilize the instrument for a better security of shifting.¹¹ In 1761, French pedagogue L’Abbé le fils was the first to recommend placing the chin to the left side of the tailpiece. This way, a more stable support for the instrument was provided; the player could place the violin horizontally at shoulder level and directly in front of himself, enabling freedom of movement in the left hand and “flexibility of bowing.”¹²

In the nineteenth century, an important device marked the development of violin support: the chin rest, invented in the 1820s by Louis Spohr. It was described in his method of 1832 as

⁹ David D. Boyden, “The Violin,” in *Musical Instruments through the Ages*, ed. Anthony Baines (1961; repr., New York: Walker and Company, 1966), 114.

¹⁰ Gwilt, <http://www.baroque-violin.info/vhold2.html>.

¹¹ Stanley Sadie and John Tyrell, eds., *The New Grove Dictionary of Music and Musicians*, 2nd ed., (New York: Grove, 2001), s.v. “Violin.”

¹² Robin Stowell, “Technique and Performing Practice,” in *The Cambridge Companion to the Violin*, ed. Robin Stowell (Cambridge: Cambridge University Press, 1992), 122-23.

“the fiddleholder,”¹³ being placed over the tailpiece, which in his opinion enabled freedom of the bowing movement. However, in 1834 Pierre Baillot recommended placing the chin to the left of the tailpiece, which would become the norm for the nineteenth century. According to Baillot, an exception could be made only in the case of children using a full size violin, that is: place the chin to the right of the tailpiece, to make bowing easier.¹⁴ Moreover, Baillot was the first to recommend a support device underneath the instrument: he acknowledged that for most players, who at the time were adult males, support from below was facilitated by the pads that were part of men’s jackets. For women and children, who did not wear such clothing, he advised that they use a thick handkerchief or a cushion, which could be placed on the shoulder, inside the clothing.¹⁵ The chin rest became increasingly popular in the nineteenth century, and support devices between the shoulder and the violin gradually became common in the nineteenth and twentieth centuries. For instance, in the 1880s Norwegian violin virtuoso Ole Bull invented a device that served both as a chin rest and as a collar bone rest.¹⁶

Starting with the twentieth century, violin pedagogues’ opinions differed with regard to instrument support, and the use of a support device underneath the instrument. The use of a device such as a shoulder rest became the subject of a heated debate regarding its influence on the instrument’s sound: various pedagogues and performers rejected it for the reason that it

¹³ Louis Spohr, *Spohr’s Grand Violin School* (1832; repr., New York: Berry & Gordon, 1852), 4.

¹⁴ Pierre Marie François de Sales Baillot, *The Art of the Violin* (1835; repr., Evanston, IL: Northwestern University Press, 1991), 25.

¹⁵ Baillot, 26.

¹⁶ Marc Nijdam, “Stützenloses Spiel auf der Bratsche” [Playing the viola without a shoulder rest] (master’s thesis, Musikhochschule Detmold, 2000), 9, accessed March 4, 2014, <http://www.violavirtuoso.de/chinrest/stzeart.pdf>.

dampened the vibrations of the instrument, and therefore reduced the volume of the sound.¹⁷ As it will be revealed in Chapter 2, this controversy is still current. An example of a pedagogue who accepted such a support device is Carl Flesch; he acknowledged the need for a cushion for players with long necks, so that raising the shoulder can be avoided.¹⁸ In the twentieth century, there has been an increase in the variety of models of chin rests and shoulder rests. For instance, in the 1930s, Croatian violinist Mirko Medakovic invented the design of the shoulder rest as it is most commonly known today: clamping to the purfling of the instrument on opposite sides.¹⁹ According to French ethnographer Lothaire Mabru, until the twentieth century, the player's body was viewed as secondary to the music, and it was supposed to endure in silence any discomfort caused by the playing posture; moreover, adding accessories to the instrument seemed to be considered as diminishing its aesthetic value.²⁰ Only in the twentieth century, the notion of listening to the player's body has been incorporated into pedagogical approaches.²¹

The viola emerged as another important member of the stringed instruments family in the seventeenth century; throughout history, the issue of viola support has been generally addressed

¹⁷ Stowell, 123.

¹⁸ Carl Flesch, *The Art of Violin Playing*, 2nd rev. ed. (New York: Carl Fischer, Inc., 1939), 15.

¹⁹ Mirko Medakovic, "Shoulder Rest for Violins" (patent), September 27, 1932, accessed March 4, 2014, <http://www.freepatentsonline.com/1879386.html>.

²⁰ Lothaire Mabru, "La mentonnière et le cousin" [The chin rest and the cushion] (Report of the research for the Mission of Ethnologic Patrimony, 1993), 35, accessed March 6, 2014, http://www.culturecommunication.gouv.fr/Media/Disciplines-et-secteurs/Patrimoine-ethnologique/Files/Rapports-de-recherche/Ethno_Mabru_1994_116.pdf.

²¹ Ibid., 81.

in a similar way to that of violin support.²² Differences concern the larger size and the increased weight of the viola, and they will be addressed in this monograph where appropriate.

Brief Overview of the Alexander Technique Approach

While the previous section has addressed the history of instrument support, which can be considered as a means to increase the physical comfort of string performers, this section presents an approach that is also geared towards maximizing the likelihood of performers' physical well-being, and can inform the choice of an optimal support system. Because performing musicians need to train their bodies (i.e. posture, embouchure, breathing mechanism) to form shapes and apply pressures conducive to producing characteristic sounds, and because those shapes and pressures must be maintained for long periods of time, the Alexander Technique, an approach for optimizing movement and minimizing stress, is a natural fit in the education of a musician. In fact, a course in Alexander Technique is often part of the music performance curriculum in universities and conservatories. Since a detailed presentation of the Alexander Technique is beyond the scope of this study, the following paragraphs will provide general information about this approach, and a few aspects that are mostly related to upper string instrument support will be discussed.

This discipline was founded by Australian professional reciter and actor Frederick Matthias Alexander (1869-1955); it originated in Alexander's efforts to find a remedy for a persistent vocal hoarseness that was threatening his career, and which medical treatment did not alleviate.²³ Movement retraining is an important aspect of Alexander Technique, but this

²² Kenneth Skeaping, "The Viola," in *Musical Instruments through the Ages*, ed. Anthony Baines (1961; repr., New York: Walker and Company, 1966), 122.

²³ Yun-Chieh Chou, "When the Mouse Meets the Elephant: A Manual for String Bass Players with Application of the Philosophy and Principles of the F. M. Alexander Technique" (DMA diss., Louisiana State University, 2013), 187, accessed December 9, 2013, etd.lsu.edu.

approach also involves a significant philosophical component; it was termed as a method of “psychophysical reeducation.”²⁴ This term is based on one of this discipline’s central ideas: body and mind cannot be separated from each other and are integrated into a single unit, the Self.²⁵ Therefore, proponents of this approach avoid the term *posture* since this would involve only the physical component; they adopted the term “Use of the Self”²⁶ to describe the totality of a person’s actions (including movements) and thoughts. If these are carried out in a manner that is detrimental to the person, the Alexandrian term is “misuse”²⁷ as opposed to *wrong posture*. This idea of wholeness influences the way of addressing physical problems of a certain body part (i.e. wrist): Alexander Technique teachers aim to address these issues by working on the student’s global Use, as opposed to “zeroing in”²⁸ on the affected part.

The goal of this discipline is to regain the natural balance and coordination that humans are endowed with at birth, but, in the majority of cases, lose in the process of growing up.²⁹ Excessive tension in performing a task is not addressed by “relaxation,”³⁰ but by attaining the minimal amount of physical effort needed to perform that task. Alexander specialists contend that overly relaxing a certain body part creates tension in another body part. For instance, instead

²⁴ O’Neill interview.

²⁵ Chou, 30.

²⁶ Ibid.

²⁷ Pedro de Alcantara, *Indirect Procedures* (Oxford: Clarendon Press, 1997), 18.

²⁸ O’Neill interview.

²⁹ Conable and Conable, 9.

³⁰ Alcantara, 15.

of being directed to “relax” his arm, the student is instructed to “free” his arm.³¹ According to Alexander Technique specialists, tightening of the neck muscles results in tension in the entire body, including the arm structure; as Barbara Conable states, “Freeing the neck is the key to freeing the whole of you!”³² This is accomplished by freeing the joint between the base of the skull and the top vertebra: the atlanto-occipital (A.O.) joint, allowing the head to be delicately balanced on top of the spine.³³ A felicitous relationship between head and neck is realized when the head goes “up and forward,”³⁴ meaning that it is not tilted backwards, and the chin is slightly in. This is not supposed to be a static posture, but a starting point for various types of movements: “There are no right places, only right relationships.”³⁵

Therefore, these principles are thought to have an important influence on upper string instrument support, since the head-neck relationship is a key factor in supporting the violin or viola, and tension in the neck results in tension of the entire arm structure (including wrists and hands),³⁶ thus affecting all aspects of playing. Moreover, the idea of avoiding a static posture results in the customization of a support system facilitating a position that is only a home base for the player to return to, as opposed to the performer being locked in one position.

³¹ O’Neill interview.

³² Barbara Conable, *What Every Musician Needs to Know about the Body: The Practical Application of Body Mapping to Making Music*, rev.ed. (Chicago, IL: GIA Publications, Inc., 2000), 7.

³³ *Ibid.*, 6.

³⁴ O’Neill interview.

³⁵ *Ibid.*

³⁶ Conable and Conable, 13.

Statement of the Problem

In a study conducted by a research team led by Alexander Technique specialist Crissman Taylor at a Netherlands university, eleven upper string students received Alexander Technique lessons for one school year, and their setup was changed several times.³⁷ One of the participants remarked that before the study she never had thought that changing her chin rest would relieve her back pain, and she only had considered the cosmetic aspect of the chin rest matching the design of the tailpiece.³⁸ Before the study, participants had attributed their playing-related problems to causes other than an ill-fitting support system: they had thought that “pain was normal,”³⁹ they had adhered to the “no pain, no gain”⁴⁰ slogan, borrowed from the field of sports; and they had believed there was something wrong with them physically, or that they were “not talented enough.”⁴¹ About instrument support, improvising violinist and world-renowned violin pedagogue Julie Lyonn Lieberman advises that teachers should not recommend to students the products they use themselves, without checking whether they match the students’ physique.⁴² According to Lieberman, many teachers do not know how to address issues related to support, because of being trained in the “no pain, no gain”⁴³ school and lacking information. Moreover,

³⁷ Faculty of Music (HKU), “Violinist in Balance,” 2005, accessed December 10, 2013, www.violinistinbalance.nl.

³⁸ Ibid.

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² Julie Lyonn Lieberman, “The Importance of Setup,” *Strings* 86 (May/June 2000): 40.

⁴³ Ibid., 42.

Lieberman suggests that whether to use or not to use a shoulder rest should not be based on a pedagogue's opinion or experience, but on what works best for each individual.⁴⁴

Violin pedagogue Lynne Denig, a key figure in the field of customizing chin rests, states that “a generic chin rest”⁴⁵ that “came with the instrument”⁴⁶ puts the player at risk for physical problems.⁴⁷ Christopher Roberts cites the views of violin shop owner David Kerr, with regard to customizing chin rests and shoulder rests. According to Kerr, most violin shops do not take these issues into account.⁴⁸ Robert Dew, a medical doctor, presents the teaching principles of renowned viola pedagogue Karen Tuttle. Speaking about customizing chin rests, he recommends that “the woodwork must conform to the anatomy rather than the vice versa.”⁴⁹

It seems that the common practice of selling (or renting) chin rests together with the instrument might contribute to the problem of string players or teachers accepting the chin rest that was purchased this way. Since shoulder rests are generally sold separately, it is easier for a teacher to recommend to a student the purchase of a certain model, or visiting a violin shop and trying many options, than to advise the same procedures for the purchase of a chin rest. Liz

⁴⁴ Julie Lyonn Lieberman, *Violin and Viola Ergonomics: Determine the Optimum Playing Position and Support for Your Body Type*, DVD, directed by Julie Lyonn Lieberman (Hal Leonard, 2010).

⁴⁵ Lynne Denig, “Chin Rests-Small Accessories That Can Make a Big Difference,” *Strings*, 1 November 2010, accessed March 6, 2014, <http://global.factiva.com.libezp.lib.lsu.edu/ha/default.aspx>.

⁴⁶ Ibid.

⁴⁷ Ibid.

⁴⁸ Christopher Roberts, “How to Find the Perfect Student Chin & Shoulder Rest,” *Strings*, 1 August 2011, accessed March 6, 2014, <http://global.factiva.com.libezp.lib.lsu.edu/ha/default.aspx>.

⁴⁹ Robert Dew, “Technique without Tension,” *Strad* 106, no. 1265 (September 1995): 937.

Dinwiddie, a violist and teacher of applied violin and viola students, contends that many teachers might feel uneasy asking a student who just started taking lessons to purchase a relatively expensive shoulder rest.⁵⁰ It seems that this financial limitation also applies to purchasing a different chin rest than the one that was provided with the instrument; I recommended this to some of my students and their parents, but I still feel uncomfortable advising it for students whose families are less likely to afford it. Therefore, it seems that it would be preferable if instruments and chin rests were sold separately, and students would need to try different options of chin rests in the violin shop (assisted by personnel qualified to advise which choice is optimal, or by their teacher) to determine the choice that best meets their physical needs. As violinist and certified Alexander Technique teacher Bill Benham stated in the 1990s, in an ideal situation, any upper string player should be able to walk into a violin shop, provide certain measurements (which could be processed with the help of a computer) and after a few days, a custom-made chin rest, built on the basis of those measurements, should be finalized.⁵¹ Benham expressed his hope that this would happen sometime in the future; while currently it is more common to have a chin rest custom made than it was in the 1990s, this procedure is not available on a large scale, as Benham envisioned.

Due to financial limitations and time constraints preventing many students from studying violin or viola in the setting of individual instruction, most of the string instruction in the U.S. occurs in the setting of large group string teaching, such as string programs in public schools, and group lessons such as those offered by instructors certified in the Suzuki method (which might include about fifty violin students). A discussion of the numerous benefits resulting from

⁵⁰ Liz Dinwiddie, "Set-up: Fitting the Instrument to the Body, When All Bodies Are Different!," *American String Teacher* 57, no. 3 (August 2007): 39.

⁵¹ Bill Benham, "Am I too Tall?," *Strings* 5 (September/October 1990): 35.

the group setting (i.e. the motivation of emulating one's peers) and a detailed presentation of successful strategies for thoroughly addressing basic skills of playing technique, despite the time constraints of the group setting (i.e. the "drill routine"⁵² proposed by renowned pedagogue James Kjelland), are beyond the scope of this study. I admire my fellow teachers of pre-college string students who are able to successfully teach in this type of setting, considering the numerous challenges they need to address simultaneously (i.e. classroom management; noticing and addressing every student's weaknesses regarding the playing technique). However, because of the large number of students and the time constraints inherent to this setting, it is difficult for the teacher to provide each student with the type of individual attention that is required in injury prevention and equipment customization, even if the teacher is aware of these issues and puts forth efforts to address them with every student.

Since the issue of modifying support devices for upper string instruments is addressed in numerous sources, as Chapter 2 will show, one might wonder why so many performers and pedagogues of these instruments are unaware of these strategies. Alternatively, if they are aware of customization strategies, the question is: why do the aforementioned problems or conditions continue? The explanation can be found in the problem that arises from reviewing this literature: all this valuable information is presented in a scattered array of materials, and these issues are not addressed at great length in sources such as textbooks for music educators. For instance, in the aforementioned study conducted by Taylor, one of the participants, who also was the research assistant for the project, mentioned that she searched through materials such as books addressing violin and viola playing, and the chapters about instrument positioning were the

⁵² James Kjelland, "String-O-Phobia: Some Causes and Cures," *American String Teacher* 37, no. 2 (Spring/1987): 73.

shortest, probably because the topic was not considered important.⁵³ Another example is a textbook for music educators used in classes for future public school-based string teachers, at numerous universities in the U.S.:⁵⁴ the issue of support customization is not addressed in this book. This is why the present monograph concentrates on this particular aspect of injury prevention.

According to most of the sources, playing-related injuries have devastating consequences on the performers, on various levels; therefore, injury prevention is a crucial aspect for a musician's career. Instrumental music teachers are a very important category of professionals who should contribute to the dissemination and application of injury prevention strategies: as Julie Lyonn Lieberman states, "The diagnosis of the underlying cause may . . . be within the realm of the astute music teacher, rather than the doctor."⁵⁵ Another all-pervasive idea is that, for upper string players, it is very important to customize the support system for every performer, in order to meet their particular physical needs, and that a good setup is crucial for tension-free playing. This emphasis on an ergonomic support is due to the fact that a detrimental support can cause various physical problems.

Therefore, this monograph has two purposes. In the first, I will bring together this scattered array of pedagogic, research-based, and anecdotal literature and other materials about performance injury derived from detrimental support into one source, organize and synthesize

⁵³ Faculty of Music (HKU), www.violinistinbalance.nl.

⁵⁴ Donald L. Hamann and Robert Gillespie, *Strategies for Teaching Strings: Building a Successful String and Orchestra Program*, 3rd ed. (New York: Oxford University Press, 2012), bk.

⁵⁵ Julie Lyonn Lieberman, *You Are Your Instrument: The Definitive Musician's Guide to Practice and Performance*, 5th ed. (New York, NY: Huiksi Music, 2004), 76.

the literature on violin/viola support with the intention of identifying principal issues, and compare the coverage and recommendations within the three aforementioned literature types, revealing consistencies and inconsistencies. By accomplishing this, the monograph would be helpful to teachers of upper string instruments, because it would enable them to have access to this knowledge, and to devise strategies for individualizing the instrument support for their students. In the second purpose of this monograph, I will assess the perceptions of college-level violin and viola pedagogues (who are also proficient performers), teachers of pre-college string students (who teach a variety of ages and levels), and college-level violin and viola students, about the importance of customizing the instrument support according to the needs of the individual player, and also to gain an insight into the strategies they are using. I will compare the perspectives offered by the literature review to the perspectives gained through this assessment (accomplished by the means of a survey developed from the literature). So, in this study, I sought to answer the following research question: how do the perceptions of upper string performers, teachers, and college students compare to the findings gleaned from the literature?

Organization of the Study

The content of this study is divided into five chapters. The introduction has provided background information, a brief historical overview of chin rest and shoulder rest development, a brief overview of the Alexander Technique approach, and the statement of the problem.

In Chapter 2, I review the literature related to upper string support customization. Source dates range from the decade of the 1960s to the present. This choice was intentional, because the 1960s began an important period for the development of music education. During this decade, the idea that music should be for everyone, as opposed to only for gifted or naturally-inclined students, started to gain widespread acceptance among U.S. public school-based string

teachers.⁵⁶ Revolutionary teaching methods, such as violin pedagogue Kato Havas's "New Approach,"⁵⁷ and Shinichi Suzuki's "Talent Education"⁵⁸ method (which was introduced the first time in America at an MENC national conference in 1964, and made a strong impression on American teachers) were introduced in the U.S. to make music accessible to a large number of students. The development of these innovative teaching methods resulted in an increased concern for the student's physical well-being, and a natural, balanced playing posture and movements; this is why the activity of the 1960s makes this decade a good starting place for the present literature review. An initial attempt to organize the literature review by types of sources—research-based, pedagogic, and anecdotal—proved unsuccessful, because there was considerable overlap of these source types. Several sub-topics, which constitute the principal issues mentioned in the Statement of the Problem section, emerged in the process of investigating the broad topic of customizing instrument support for upper string instruments; this topical approach was chosen because it allowed for more flexibility. Therefore, the review is organized according to five topical headings: Possible Injury Problems Resulting from an Inadequate Setup; General Considerations about Instrument Support; Customizing Instrument Placement; Customizing the Shoulder Rest; and Customizing the Chin Rest.

Chapter 3 addresses the methodology of this monograph, principally, the search techniques used to develop a comprehensive bibliography of relevant literature, and the

⁵⁶ Robert A. Choate, *Documentary Report of the Tanglewood Symposium* (Washington, DC: Music Educators National Conference, 1968), bk.

⁵⁷ Kato Havas, *A New Approach to Violin Playing* (London: Bosworth & Co., LTD, 1961), bk.

⁵⁸ Michael L. Mark and Charles L. Gary, *A History of American Music Education*, 3rd ed. (Lanham, MD: Rowman & Littlefield Education, 2007), 440-41.

qualitative techniques used to develop a survey, i.e., methods of developing the questions based on the information revealed through the literature; distributing the survey to the respondents; and time frame. Chapter 4, Results and Discussion, presents the analysis of the survey responses, the perspectives based on the findings from the literature, and compares the respondents' perspectives to the findings gleaned from the literature review.

Chapter 5, Recommendations and Suggestions for Future Research, provides my own perspective about how these findings can be used to determine what upper string instrument teachers need in terms of education and professional development, and to maximize the likelihood of preventing performance-related injury for upper string instrument students and performers by finding an optimal support system for each individual. Directions of future research on the topic are suggested.

CHAPTER 2 LITERATURE REVIEW

Possible Injury Problems Resulting from an Inadequate Setup

Before addressing specific strategies of customizing instrument support, it seemed important to investigate specific physical problems that an ill-fitting support system can cause, from the standpoint of both medical doctors and pedagogues (of upper string instruments, and of the Alexander Technique). Thus, this section is organized according to these two categories.

Views of Medical Doctors

Medical doctor Richard Norris is a key figure in the field of performing arts medicine. In a book addressing performance injuries for various categories of instrumentalists, he mentioned the issue of support for upper string instruments. Norris stated that an inadequate chin rest height (a “short chin rest”)¹ can be a factor in chronic pain and spasms in the left trapezius and neck muscles, one of the most common problems in upper string players.² Moreover, prolonged tilting and rotating of the head leads, over time, to the narrowing of foramina (openings between cervical vertebrae). Nerve roots that exit through the foramina are irritated, which causes radiculitis, the medical term for pain radiating from the neck all the way down to the fingers.³

In an article, Satoshi Obata and Hiroshi Kinoshita presented the results of a study conducted with the aim of measuring the force generated between players’ left jaw and chin rest.

¹ Richard Norris, *The Musician’s Survival Manual: A Guide to Preventing and Treating Injuries in Instrumentalists*, Third printing (San Antonio, TX: Crumrine Printers, 1997), 25.

² Ibid.

³ Ibid., 78; for neck posture influencing hands, also see: Robert Dew, “Technique without Tension,” *Strad* 106, no. 1265 (September 1995): 937; Alice G. Brandfonbrenner, “The Epidemiology and Prevention of Hand and Wrist Injuries,” *Hand Clinics* 6, no. 3 (August 1990): 372.

The authors, specialized in the field of medicine, devised a force-sensing chin rest for the purposes of the study.⁴ They believed that force applied to the jaw (by pressing on the chin rest) is a major factor in temporo-mandibular disorders (TMDs)—disorders of the temporo-mandibular joint (TMJ), the medical term for the jaw joint. Other issues caused by exaggerated pressure on the chin rest are musculoskeletal problems in neck and shoulders, and bruxism, a dental problem involving excessive grinding of the teeth and/or excessive clenching of the jaw.⁵ TMDs were also mentioned by orthopedist and violinist Albrecht Lahme and dentist Joachim Lahme. The authors found that an ill-fitting chin rest reverses the normal curve of the cervical spine because of kyphosis (caused by bringing the head down too much) and leftward rotation of the head.⁶

In an article presenting the case study of an injured violinist, medical doctors Anke Steinmetz, Wolfgang Seidel, and Kai Niemier found that changing the player's chin rest helped improve the pain condition in his left shoulder.⁷ He originally had used a flat and low chin rest, and his violin had been positioned too far out to the left. The researchers provided him with a higher chin rest and instructed him to hold the violin more in front of himself. This caused the

⁴ Satoshi Obata and Hiroshi Kinoshita, "Chin Force in Violin Playing," *European Journal of Applied Physiology* 112 (2012): 2085.

⁵ Ibid.; for the detrimental consequences of excessive jaw pressure, also see: Norris, 24; Julie Lyonn Lieberman, *Violin and Viola Ergonomics: Determine the Optimum Playing Position and Support for Your Body Type*, DVD, directed by Julie Lyonn Lieberman (Hal Leonard, 2010).

⁶ Albrecht Lahme and Joachim Lahme, "Entwicklung einer individuellen Kieferwinkelstütze" [Developing an individual jaw angle rest], *Das Orchester* (March 1993): 248.

⁷ Anke Steinmetz, Wolfgang Seidel, and Kai Niemier, "Shoulder Pain and Holding Position of the Violin: A Case Report," *Medical Problems of Performing Artists* 23, no. 2 (June 2008): 80.

posture of his neck to be restored to a more natural position, and eventually he resumed orchestral playing.⁸

An article by J. Blum and G. Ritter addressed the “practice mark”⁹ on players’ jaws (also called “fiddler’s neck”),¹⁰ which can range from a slight swelling and discoloration of the skin to an inflammatory condition (sometimes with pus), and even to a tumor.¹¹ In some cases, it is so severe that it prevents the musicians from playing.¹² The authors, orthopedic surgeons (the first author is also a former violin maker) found that changing the playing posture and modifying or replacing the chin rest are effective solutions to this problem. Their conclusion was that an optimally fitting support for violinists is very important, since it reduces the need for jaw pressure, and it relaxes the cervical spine.¹³

Views of Pedagogues

Fiddler’s neck was also mentioned in an article by violin teacher Lynne Denig, introduced in Chapter 1 (a former student of renowned violin pedagogue Paul Rolland) and violin maker Gary Frisch, who devised a system of customizing support based on Rolland’s

⁸ Steinmetz, Seidel, and Niemier, 80.

⁹ J. Blum and G. Ritter, “Violinists and Violists with Masses under the Left Side Angle of the Jaw Known as 'Fiddler's Neck,'" *Medical Problems of Performing Artists* 5, no. 4 (December 1990): 155.

¹⁰ Ibid.

¹¹ Ibid.

¹² Ibid.

¹³ Ibid., 158.

principles.¹⁴ According to the authors, an ill-fitting chin rest can cause pressure points on the player's neck, since a small part of the chin rest presses on a small part of the neck. This issue and buildup of bacteria result in neck sores.¹⁵ Moreover, ill-fitting chin rests cause students to secure the instrument by tilting their heads to the left while looking to the right. This posture does not conform to our natural alignment; so, it causes neck pain, headaches, and aches in other body parts.¹⁶ Another pedagogue who addressed medical problems resulting from improper support was Lieberman (presented in Chapter 1). In an article, she attributed tenderness or even injury of the right rotator cuff to an instrument placement too much in front of the player, caused by improper support devices.¹⁷

The results of the Alexander Technique study conducted by Taylor, mentioned in Chapter 1, were presented on a website.¹⁸ Taylor found that clamping down with the chin to secure the instrument (due to ill-fitting support) results in neck tension.¹⁹ Because of the paramount influence of the neck, a chain reaction of tension is initiated, and various body parts are affected.

¹⁴ Paul Rolland and Marla Mutschler, *The Teaching of Action in String Playing: Developmental and Remedial Techniques; Violin and Viola* (Urbana, IL: Illinois String Research Associates, 1974), 62.

¹⁵ Lynne Denig and Gary Frisch, "Chin Rest Choice Based on Jaw Type," *American String Teacher* 57, no. 1 (February 2007): 46. For small part of chin rest pressing on small part of neck, also see L. J. Goldstein, "When Violin Scars Jaw, Try Custom Chin Rest," *Dental Survey* 44, no. 9 (1968): 48.

¹⁶ Ibid.

¹⁷ Julie Lyonn Lieberman, "The Importance of Setup," *Strings* 86 (May/June 2000): 41.

¹⁸ Faculty of Music (HKU), "Violinist in Balance," 2005, accessed December 10, 2013, www.violinistinbalance.nl.

¹⁹ Ibid.

For instance, clamping results in a twisting of the spine, which originates in the neck, when players “look”²⁰ for the instrument with the chin, pushing the head down and to the left.²¹

Therefore, the issue of possible injury problems resulting from an inadequate setup was allotted an extensive coverage in numerous sources, and the recommendations showed consistencies among these sources: authors agreed upon the idea that a detrimental support can cause various medical problems, such as cervical strain, radiculitis, muscle spasms in the neck and upper back, problems in hands and wrists, headaches, TMDs, bruxism, shoulder pain, fiddler’s neck, and rotator cuff injury.²² These problems arise because of support devices imposing on the player postures that do not conform to the anatomical natural alignment. Moreover, Alexander Technique specialists noticed tension patterns induced by detrimental support, which over time might lead to injury; these patterns affect various parts of the body. Thus, finding an optimal support system is crucial for the prevention of such problems.

General Considerations

Before discussing specific details about support devices, it seemed important to investigate general principles related to upper string instrument support, such as: anatomical structures that should constitute balance points for support; head position, and whether it should be determined by the goal of watching the left hand while playing; whether the balance points of support should be the same for the entire time of playing, or alternate according to the demands of the music; and reasons for performers’ and pedagogues’ choices of a certain support system.

²⁰ Faculty of Music (HKU), www.violinistinbalance.nl.

²¹ Ibid.

²² For other medical problems possibly caused by improper support, see Nick J. Reina et al., “Paget-Schroetter Syndrome in a Viola Player,” *Medical Problems of Performing Artists* 3, no. 1 (March 1988): 24-25.

In a textbook for the Alexander Technique, Conable and Conable, teachers of this discipline (mentioned in Chapter 1) reported that there are four main sources of support for upper string instruments: the collarbone, the left arm and hand, the bow path, and the sheer weight of the head (rather than pressure); the authors recommended “constant interplay”²³ among these sources of support, as opposed to a static posture. The authors contended that sometimes the head can be off the chin rest, and head weight is required only for shifting down; neck muscles should be free, so that head weight can be released effortlessly.²⁴ Cellist and Alexander Technique teacher Pedro de Alcantara addressed the issue of watching the left hand while playing; he believed this causes misuse of the Self, and the best way of controlling the fingers’ action is kinesthetically, rather than visually.²⁵ This idea can be applied to upper string instruments; thus, the head does not need to be positioned so that the player can see his left hand.

The aforementioned study conducted by Taylor presented the researchers’ views about head position. According to Taylor, the instrument should be stabilized only by turning the head and nodding, since nodding the head down places less stress on the neck than tilting the head laterally.²⁶ The researchers proposed a flexible support system: the responsibility should be divided between collarbone, left hand, and shoulder rest (if any) from underneath, and leverage forces should be provided by head weight on the chin rest from on top.²⁷ Taylor contended that,

²³ Barbara Conable and William Conable, *How to Learn the Alexander Technique: A Manual for Students*, 3rd ed. (Portland, OR: Andover Press, 1995), 133.

²⁴ Ibid., 132; for the idea of “light intermittent pressure” on the chin rest, also see Faculty of Music (HKU), www.violinistinbalance.nl.

²⁵ Pedro de Alcantara, *Indirect Procedures* (Oxford: Clarendon Press, 1997), 24.

²⁶ Faculty of Music (HKU), www.violinistinbalance.nl.

²⁷ Ibid.

aside from physical well-being, “skeletal resonance”²⁸ (the vibrations of the instrument being transmitted through bones, which enhances tone quality, due to resonance) was another reason for preferring the collarbone over the shoulder as a balance point for support.²⁹

Violinist and pedagogue Malva Freymuth reported that her principles regarding instrument support are based on the study of kinesiology. In an article, she recommended that the instrument be placed close to the body (resting on the collarbone), thus relieving the deltoid muscles of “extra work.”³⁰ The head position should involve: minimal rotation (20°-30°) with “evenly distributed pressure on chin and jaw,”³¹ no tilting, and “nodding”³² down about 1 cm.³³

In an instructional DVD, Lieberman addressed the topic of support at length.³⁴ According to the author, a static posture creates tension, since the perceived weight of the instrument is greater than if the instrument is in motion; therefore, she recommended a “dynamic relationship”³⁵ with the instrument. She coined the term “triangle of weightlessness”³⁶ to

²⁸ Faculty of Music (HKU), www.violinistinbalance.nl.

²⁹ Ibid.

³⁰ Malva Freymuth, “Give Your Students Security and Comfort: Custom Fit their Shoulder Pads and Chinrests,” *American Suzuki Journal* 30 (2002): 59.

³¹ Ibid.

³² Ibid., 62.

³³ Ibid.; for detrimental consequences of tilting head, also see Mary McGovern, “Spinal Comfort,” *Strad* 110, no. 1311 (July 1999): 724.

³⁴ Julie Lyonn Lieberman, *Violin and Viola Ergonomics: Determine the Optimum Playing Position and Support for Your Body Type*, DVD, directed by Julie Lyonn Lieberman (Hal Leonard, 2010).

³⁵ Ibid.

³⁶ Ibid.

describe alternating the responsibility of support sources: jaw, left shoulder, and left hand, while playing. In her aforementioned article, Lieberman disapproved of a static posture; she advised making minute adjustments constantly and rotating responsibility between thumb, inner wall of first finger, shoulder, collarbone, and chin.³⁷ She contended that watching the left hand should be avoided, since it causes the instrument to be pulled in front of the player; the head should be turned halfway or slightly less to the left, and the chin lowered one-half to one inch.³⁸

Rolland also advised against a static posture, which in his opinion causes “static tension;”³⁹ he suggested balancing the instrument among six support points: collarbone, chin, thumb, side of first finger, fingertips, and inside of wrist (in high positions).⁴⁰ In a book that was the result of a very important project for American string pedagogy, Rolland and violin pedagogue Marla Mutschler addressed the issue of support. They cited pedagogues who advocated supporting the violin like a “bridge”⁴¹ (both with left hand and by the chin-shoulder combination) and mentioned that other pedagogues preferred the “diving board”⁴² approach (supporting the instrument only by the means of chin and shoulder). The authors acknowledged

³⁷ Lieberman, “The Importance of Setup,” 40.

³⁸ Ibid.

³⁹ Marianne Murray Perkins, *A Comparison of Playing Techniques: Kato Havas, Paul Rolland, and Shinichi Suzuki* (Bloomington, IN: American String Teachers Association, 1995), 100.

⁴⁰ Ibid.

⁴¹ Rolland and Mutschler, 71.

⁴² Ibid.

that the *bridge* approach is more relaxed, but support should vary according to the specific musical passage, and sometimes the *diving board* approach is required, to “free the left hand.”⁴³

The doctoral dissertation of Carol Porter McCullough, violinist, violin teacher, and a certified teacher of the Alexander Technique, addressed the connection between Alexander Technique principles and Rolland’s work. According to McCullough, the instrument should be stabilized by releasing the head forward from the A.O. joint (term that was explained in Chapter 1), and it is acceptable to turn the head slightly to the left before releasing it on the chin rest;⁴⁴ moreover, the instrument should be balanced on the collarbone.⁴⁵ Renowned violin pedagogue Mimi Zweig also considered Rolland’s work as one of the major influences on her teaching approach, which is based on the principle of physical freedom. According to Zweig, the instrument should be balanced on the collarbone using left hand and head;⁴⁶ this balancing should be a “give and take”⁴⁷ between the support provided by the left arm and the “cantilever effect”⁴⁸ of head weight on the chin rest. The head should stay flexible.⁴⁹

In a book presenting her innovative approach to violin teaching, mentioned in Chapter 1, Havas introduced every aspect of playing technique through a sequence based on natural

⁴³ Rolland and Mutschler, 71.

⁴⁴ Carol Porter McCullough, “The Alexander Technique and the Pedagogy of Paul Rolland” (DMA diss., Arizona State University, 1996), 62.

⁴⁵ Ibid., 75.

⁴⁶ Mimi Zweig, *StringPedagogy*, DVD Edition (2008).

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ Ibid.

balance, rather than force.⁵⁰ According to Havas, to support the violin, the player's head should drop on the instrument from a forward nodding movement, without turning or tilting the head.⁵¹ The head should not have a vise-like grip on violin; therefore, she proposed the idea of "no violin hold."⁵² Havas recommended that the left hand should not be used at all to support the violin.⁵³

The topic of instrument support was included in a book by world-renowned violinist and violin pedagogue Yehudi Menuhin. Menuhin adhered to the *bridge* approach, consisting of two support sources for the violin: the collarbone ("passive"),⁵⁴ and the left hand ("active").⁵⁵ According to Menuhin, for this approach, the left thumb's role is very important in supporting the violin, especially for certain skills required by the repertoire; however, the thumb should not be in a state of continuous effort, and it should be freed when the repertoire does not demand these skills.⁵⁶ The head weight on the chin rest should prevent the violin from slipping off the

⁵⁰ Kato Havas, *A New Approach to Violin Playing* (London: Bosworth & Co., LTD, 1961), 2 ; for other pedagogic approaches based on the knowledge of the body's natural balances, see Dominique Hoppenot, *Le violon intérieur* [The violin within] (Paris: Editions Van de Velde, 1981), bk.

⁵¹ Ibid., 17.

⁵² Kato Havas, *Stage Fright: Its Causes and Cures with Special Reference to Violin Playing* (London: Bosworth & Co., LTD, 1973), 18.

⁵³ Havas, *New Approach*, 17.

⁵⁴ Yehudi Menuhin, *Violin: Six Lessons with Yehudi Menuhin* (New York: The Viking Press, 1972), 52.

⁵⁵ Ibid.

⁵⁶ Ibid.

collarbone; for shifting down, head weight is increased by pulling the chin in.⁵⁷ The tip of the left shoulder should stay free, which reduces the likelihood of hunching the shoulder.⁵⁸

In a book meant to provide general information about the viola, renowned viola pedagogue William Primrose stated his views about instrument support. According to Primrose, the viola should be held with the left hand and rest on the shoulder; for shifting up, gently pushing the viola into the neck is sufficient (as opposed to gripping); for shifting down, he advised to only use a light and swift pressure with the chin, rather than pushing the shoulder up.⁵⁹ Primrose stated that it is not required to watch the left hand, since this causes the neck muscles to tighten.⁶⁰ Viola pedagogue David Dalton interviewed Primrose about aspects of viola playing. In a book based on these interviews, Primrose accepted a “small quick movement”⁶¹ of the shoulder for shifting down; he also advised against pressing with the thumb.⁶²

Baroque violinist and pedagogue Elizabeth Wallfisch reported that she does not use a chin rest or a shoulder rest, for the reasons of both physical well-being and observance of tradition.⁶³ For this approach, she recommended placing the chin to the right of the tailpiece,

⁵⁷ Menuhin, *Violin: Six Lessons with Yehudi Menuhin*, 53.

⁵⁸ *Ibid.*, 52.

⁵⁹ Yehudi Menuhin Music Guides, *Violin & Viola: Yehudi Menuhin & William Primrose* (1976; repr., London: Kahn & Averill, 2004), 180.

⁶⁰ *Ibid.*

⁶¹ David Dalton, *Playing the Viola: Conversations with William Primrose* (New York: Oxford University Press, 1988), 52.

⁶² *Ibid.*, 54-56.

⁶³ Elizabeth Wallfisch, “Restless World,” *Strad* 115, no. 1373 (September 2004): 906-7.

without the head touching the instrument; the shoulder should not be lifted.⁶⁴ Like Menuhin, Wallfisch considered the collarbone as an important balance point; she also used left-hand support (without squeezing), the base of the first finger being another balance point; the bow is a major source of support.⁶⁵

In an article presenting Tuttle's teaching approach, Dew (introduced in Chapter 1) addressed head position, stating that the most natural position is facing straight forward.⁶⁶ According to Dew, tension on nerves, muscles, and blood vessels is reduced if the head is slightly tilted backwards as opposed to pushed forward.⁶⁷ It seems that Alexander Technique specialists would disagree with this idea, due to the principle, explained more fully in Chapter 1, of the head "forward and up."⁶⁸ Dew advises that the side of jaw (as opposed to the chin) should be placed in the chin rest, so that head weight, rather than effort from neck muscles, can be used for support.⁶⁹

Therefore, the issue of general considerations regarding upper string instrument support was allotted an extensive coverage in numerous sources. Consistencies can be noted with regard to the majority of aspects, for instance, regarding one of the major findings: a static positioning (*hold*) of the instrument is detrimental, and there should be a constant exchange between the

⁶⁴ Wallfisch, 907.

⁶⁵ Ibid., 909.

⁶⁶ Robert Dew, "Technique without Tension," *Strad* 106, no. 1265 (September 1995): 937.

⁶⁷ Ibid.

⁶⁸ McCullough, 36.

⁶⁹ Dew, 937; for placing jaw in chin rest, also see: Zweig, *String Pedagogy*; Lieberman, *Violin and Viola Ergonomics*.

amount of support provided by various balance points in the player's body;⁷⁰ the instrument should be supported by balancing, and not by gripping. Sources mentioned both the *diving board* and the *bridge* approach, and there was consensus with regard to needing more head support for downward shifts. Most sources contended that the balance points at the end button side of the instrument should be the jaw and the collarbone. An exception regarding this aspect stands out: the Baroque approach using neither chin rest nor shoulder rest results in the instrument being supported only with the left hand resting on the collarbone. Another example of consistency is the sources' agreement upon the idea of sheer head weight (as opposed to pressure) providing support, and upon placing the side of the jaw, rather than the chin itself, in the chin rest. Most sources showed consistency with regard to head position, agreeing upon the following aspects: head mobility during playing; positioning the head by minimal turning to the left and nodding; watching the left hand should not be a goal of this positioning. Aside from body type and comfort, a few sources mentioned observance of tradition, and tone quality (i.e. *skeletal resonance*) as reasons for choosing a certain support system; these arguments could be interpreted as inconsistencies, but this does not have a negative connotation, as long as they do not deny the player's physical well-being as the decisive factor in this choice.

Customizing Instrument Placement

A general idea that emerges from numerous sources is that, in order to create a customized support system, the optimal instrument placement for the individual player (which depends on many variables related to the player's physique) should be determined first, and only

⁷⁰ For the idea of avoiding a static posture, also see: Ernest Herman, "Orthodontic Aspects of Musical Instrument Selection," *American Journal of Orthodontics* 65, no. 5 (1974): 528; Simon Fischer, "Holding the Violin," *Strad* 116, no. 1381 (May 2005): 79.

then the support devices should be adjusted so that this placement can be achieved, rather than letting these devices dictate the instrument placement.

In the aforementioned DVD, Lieberman determined instrument placement according to four planes: vertical, horizontal, angle of scroll, and “tilt of the face of the instrument.”⁷¹ The vertical plane concerns how high the instrument is placed on the player’s body in relation to the collarbone, and it informs the decision of building up support from underneath the instrument, from on top, or symmetrically from above and below.⁷² To decide how to build up support for every player, Lieberman advised to gently bounce the arms “in and out of gravity,”⁷³ to see where exactly the elbow feels comfortable when the arm is suspended by the player’s side. If the instrument is placed higher than this level, the left arm is pushed up, and the shoulders raise.⁷⁴ The horizontal plane concerns the instrument placement more in front of the player, or farther out to the left. Lieberman contended that if the instrument is too much in front, the right arm is pushed too far to the side, and “the rotator cuff cannot operate properly.”⁷⁵ So, this placement should be decided by considering the ability of swinging the right elbow high without engaging the shoulder.⁷⁶ The *scroll angle* plane concerns whether the scroll is placed parallel to the floor, pointing towards the ceiling, or pointing towards the floor. A player can have the base of the instrument itself (rather than the shoulder rest) rest on the collarbone, and raise the scroll by the

⁷¹ Lieberman, *Violin and Viola Ergonomics*.

⁷² Ibid.

⁷³ Ibid.

⁷⁴ Ibid.

⁷⁵ Ibid.

⁷⁶ Ibid.

means of the left arm; so, the instrument is *low* according to the vertical plane, but the scroll angle is *pointing up*. Lieberman believed that the scroll pointing too much upwards has the same consequences as placing the instrument too high on the vertical plane, and if the scroll droops downwards, the left elbow gets “trapped”⁷⁷ into the player’s side. Regarding tilt, Lieberman stated that if the instrument is flat (all strings level), both the left hand and the right shoulder experience difficulties when playing on the lowest string.⁷⁸ Thus, she advised tilting the instrument towards the bow arm, until the point that one can bow on the highest string in a relaxed manner, without hitting the hip.⁷⁹ In her aforementioned article, regarding support, Lieberman advised a “bargaining agreement”⁸⁰ between facilitating left-hand and right-hand activities: for instance, placing the instrument farther out to the left enables left arm rotation, but it might create difficulties in keeping the bow perpendicular to the string.⁸¹

British violin pedagogue Simon Fischer also addressed instrument placement. With regard to scroll angle, he stated that, due to instrument construction, the instrument’s neck angles slightly downwards; thus, the scroll should point slightly up, so that the strings can be parallel to the floor.⁸² Fischer cited legendary violinist Jascha Heifetz, who advised raising the scroll for shifting up, so that the hand can move down.⁸³ Regarding horizontal plane placement, Fischer

⁷⁷ Lieberman, *Violin and Viola Ergonomics*.

⁷⁸ Ibid.

⁷⁹ Ibid.

⁸⁰ Lieberman, “The Importance of Setup,” 41.

⁸¹ Ibid.

⁸² Simon Fischer, “Holding the Violin,” *Strad* 119, no. 1414 (2008): 77.

⁸³ Ibid.

stated that it should depend on arm length: at the tip, the arm should not be extended all the way, but also not overly bent.⁸⁴ This angle can be changed while playing: at the frog, the scroll may be moved to the left, and at the tip, it may be moved to the right.⁸⁵ Fischer mentioned the tilt, advising adjustments while playing; for instance, second violinists (i.e. in a string quartet) tilt the violin to the right, to enable playing on the lower strings, and first violinists place it flatter, facilitating playing on the upper strings.⁸⁶

In the aforementioned study, Taylor addressed horizontal plane placement, advising that it should be determined by the angle between right arm and strings.⁸⁷ To this end, the following procedure was devised: the player was asked to place the instrument (without a shoulder rest) on the collarbone, to draw an up bow on the highest string, and to stop when the elbow was bent at a right angle. If bow and string did not form a right angle, the instrument (rather than the bow) was adjusted until this angle was obtained; so, the instrument placement did line up with the bow arm's natural movements.⁸⁸ Taylor also addressed tilt, stating that the instrument should be tilted towards the bow arm, especially for small players.⁸⁹ Primrose also discussed these two planes: regarding the horizontal one, he advised against the instrument being too much in front, which

⁸⁴ Fischer, "Holding the Violin," (2008): 77.

⁸⁵ Ibid.

⁸⁶ Ibid.

⁸⁷ Faculty of Music (HKU), www.violinistinbalance.nl.

⁸⁸ Ibid.

⁸⁹ Ibid.

“pulls the left shoulder forward,”⁹⁰ eventually causing neck pain. He contended that the instrument should be tilted to the right, about 45° from the player’s body.⁹¹ With regard to the horizontal plane, Denig and Frisch devised a procedure of determining instrument placement based on flexibility of left arm and pinkie length; the resulting placement differs for each student.⁹² According to Frisch, instrument tilt can be adjusted while playing: turning the head to the left flattens the instrument, while turning the head to the right tilts the instrument.⁹³

With regard to scroll angle plane, renowned violin pedagogue Ivan Galamian preferred a high scroll position (since it throws the instrument’s weight “towards the player’s neck and shoulder”)⁹⁴ over a drooping scroll, which causes this weight to “fall towards the left hand.”⁹⁵ Primrose suggested a “level or elevated”⁹⁶ scroll position, but he acknowledged that many violists place the scroll pointing down, which, however, he did not consider as detrimental as resting the upper arm against the torso.⁹⁷ Medical doctor Jere B. Stern contended that fiddler’s

⁹⁰ Yehudi Menuhin Music Guides, 181; for the advantages of placing the instrument more to the left, also see Dew, 937.

⁹¹ Dalton, 57; for the benefits of tilting the instrument towards the bow arm, also see Dew, 937.

⁹² Denig and Frisch, 49; for procedures devised to determine scroll placement, also see Zweig, *String Pedagogy*.

⁹³ Lynne Denig, e-mail message to author, January 22, 2014.

⁹⁴ Ivan Galamian, *Principles of Violin Playing and Teaching*, 2nd ed. (Englewood Cliffs, N.J.: Prentice-Hall, 1985), 13.

⁹⁵ Ibid.

⁹⁶ Dalton, 47.

⁹⁷ Ibid.

neck is aggravated by a drooping scroll, since the chin rest's edge "digs"⁹⁸ into the player's neck more than if the scroll would be parallel to the floor. In his doctoral dissertation, Hsuan Lee stated that placing the scroll too high causes fatigue; he suggested a home base position from which students can play without fatigue, and a high scroll placement only for situations such as playing clearly on the highest string.⁹⁹

Therefore, all the placement planes were allotted a fairly extensive coverage in the sources; several authors proposed that a compromise between benefits and disadvantages of a certain placement can be achieved by adjusting the instrument position while playing, according to repertoire demands. Consistencies can be observed with regard to all the placement planes. Regarding scroll angle, most sources recommended the scroll to be either parallel to the floor, or pointing upwards; adjustments during playing can be achieved by lifting the scroll for certain technical skills. However, some sources cautioned against an "iconic"¹⁰⁰ posture with a very high scroll, since it does not fit every player's body and it cannot be maintained without fatigue. This argument could possibly be considered as an inconsistency since it was mentioned by fewer sources; nevertheless, this does not bear a negative connotation, since it is a valid argument, taking into account the player's physical well-being. Horizontal placement can be changed while playing, by moving the scroll laterally. Regarding tilt, most sources showed consistency; they agreed upon tilting the instrument to the right, and upon the possibility of adjusting this angle while playing.

⁹⁸ Jere B. Stern, "The Edema of Fiddler's Neck," *Journal of the American Academy of Dermatology* 1, no. 6 (1979): 540.

⁹⁹ Hsuan Lee, "Towards a Dynamic Pedagogy: Contemporary Pedagogical Approaches to Basic Violin Technique" (DMA diss., University of Washington, 2003), 26.

¹⁰⁰ Lieberman, *Violin and Viola Ergonomics*.

Customizing the Shoulder Rest

Shoulder rests can be classified into two main categories. One category is comprised of “soft”¹⁰¹ shoulder rests, which can be sponges, curved pieces of foam, or the *Playonair* brand (an inflatable cushion adjustable in thickness). These shoulder rests (also referred to as *pads*) do not lock the instrument into one position, but they may absorb sound, because they touch the back of the instrument.¹⁰² The other category is comprised of “rigid”¹⁰³ rests, which consist of two feet, attaching to the sides of the instrument, and connected by a rigid, curved bar (differently shaped for each brand) covered with a pad (in some sources referred to as *cushion*). The height of these shoulder rests is generally adjustable by turning the screw feet, making them higher or lower.

An initial attempt to organize this section chronologically, to observe the development of different shoulder rest brands, proved unsuccessful, since there always was a debate about using or not using a shoulder rest, for reasons of: influence on the instrument’s sound, appearance, or anatomical considerations. Therefore, this section is organized according to whether sources recommended a shoulder rest, advised against using one, or accepted it—but not with the purpose of building up height for long-necked players (for this, they advised building up the chin rest). Most of the sources showed a flexible approach, and mentioned that for players with a particular physique a compromise can be made; for instance, Menuhin endorsed playing without a shoulder rest, but he stated that long-necked players can use a substitute.¹⁰⁴

¹⁰¹ Lisa Ann Berman, “How to Choose a Violin Shoulder Rest,” Ezine Articles, 2009, accessed March 11, 2014, <http://ezinearticles.com/?How-to-Choose-a-Violin-Shoulder-Rest&id=2191624>.

¹⁰² Ibid.

¹⁰³ Ibid.

¹⁰⁴ Menuhin, *Violin: Six Lessons with Yehudi Menuhin*, 53.

Sources Recommending a Shoulder Rest

In a study, medical specialists Charles Levy et al. investigated the effect of shoulder rest use on muscle tension. The activity of certain muscles involved in instrument support was measured for fifteen violinists, for two conditions: playing with, and without a shoulder rest (the same shoulder rest, a *Kun* brand, was used for all the players; they were asked to adjust it for comfort).¹⁰⁵ For each of these conditions, participants were assigned three tasks: merely supporting the violin in playing position; playing an excerpt in first position; and playing an excerpt involving shifting. Players' necks and shoulders were also measured. Researchers found that using a shoulder rest helps decrease muscular activity—therefore, muscle tension—especially for players with a larger neck and shoulder size.¹⁰⁶ The conclusion of the study was that using a shoulder rest might decrease the likelihood of musculoskeletal problems, especially for the sternocleidomastoid and trapezius areas.¹⁰⁷

Professional cellist and injury prevention advocate Janet Horvath addressed support for upper string instruments in a book about performance injury. According to Horvath, if properly adjusted, shoulder rests help “alleviate tension in neck and shoulder.”¹⁰⁸ The author mentioned brands for children: *Up and Away* (which reduces effort in supporting), and *Kinder Chinder*.¹⁰⁹

¹⁰⁵ Charles Levy et al., “Electromyographic Analysis of Muscular Activity in the Upper Extremity Generated by Supporting a Violin with and without a Shoulder Rest,” *Medical Problems of Performing Artists* 7, no. 4 (1992): 104.

¹⁰⁶ *Ibid.*, 108.

¹⁰⁷ *Ibid.*, 109.

¹⁰⁸ Janet Horvath, *Playing (less) Hurt: An Injury Prevention Guide for Musicians*, rev. ed. (Eau Claire, WI: Documation LLC, 2009), 178.

¹⁰⁹ *Ibid.*

Havas also recommended the use of a shoulder rest, stating that the choice of this device should be tailored to the individual's needs.¹¹⁰ Galamian contended that a shoulder pad is an "intelligent solution"¹¹¹ for a long-necked player; it should be a model not touching the instrument's back.¹¹²

In the aforementioned DVD, Lieberman provided detailed information about shoulder rest customization. For the vertical placement plane, she advised to start by figuring out the shoulder rest, as opposed to the chin rest.¹¹³ For short-necked players, a device made from a material providing friction (such as a pad for shoes) might be sufficient.¹¹⁴ Lieberman mentioned several shoulder rest models: "straight-line"¹¹⁵ models (*Kun, Viva*); *Wolf Forte Secondo* (which "moves in a curve");¹¹⁶ and *Bon Musica*. For players with narrow shoulders, she advised first to try *Wolf Forte Secondo*, then *Viva*.¹¹⁷ *Bon Musica* was deemed a possible choice for long-necked players with a long torso, since it has a longer screw than other brands. The bent end may hook around the shoulder, helping to stabilize the instrument (but it can be straightened if the player does not wish to use this feature).¹¹⁸ Most shoulder rests are adjustable in width, by having three holes on each side; the screw feet can be placed in either hole, making the shoulder rest wider or

¹¹⁰ Havas, *New Approach*, 13.

¹¹¹ Galamian, 13.

¹¹² Ibid.

¹¹³ Lieberman, *Violin and Viola Ergonomics*.

¹¹⁴ Ibid.

¹¹⁵ Ibid.

¹¹⁶ Ibid.

¹¹⁷ Ibid.

¹¹⁸ Ibid.

narrower, and consequently making the instrument go lower or higher on a player's chest and shoulder.¹¹⁹ The shoulder rest's placement on the instrument can vary: it can be symmetrical on the sides of shoulder (lowest string) and chest (highest string), or placed higher on the instrument on either side. To accommodate the tilt plane of placement, the author suggested reversing the order of the screw feet. Most shoulder rests have a longer screw on the chest side and a shorter screw on the shoulder side, which results in a flat positioning of the instrument; she advised placing the longer screw on the shoulder side, to make the face of the instrument tilt.¹²⁰ According to Lieberman, previously used models did absorb the instrument's vibrations; for current brands, this issue was eliminated due to the placement of the feet on the purfling.¹²¹

In the aforementioned article, Lieberman also addressed the tone quality issue: she contended that a placement of the instrument directly on the shoulder dampens vibration more than the shoulder rest, and even if shoulder rests reduced vibration by 7 %, this would be preferable to having a full sound but not being able to play because of discomfort.¹²² For players with broad shoulders, the author recommended *straight-line* models (*Kun, Bon Musica*).¹²³

In 1982, Ronald Masin and Maria Kelemen wrote a violin method based on their training in the Belgo-Hungarian violin pedagogy tradition. They contended that a shoulder rest is needed

¹¹⁹ Lieberman, *Violin and Viola Ergonomics*.

¹²⁰ Ibid.

¹²¹ Ibid.

¹²² Lieberman, "The Importance of Setup," 40-41.

¹²³ Ibid., 41.

if one's neck is longer than 2 ½ in. (the height of the violin added to that of the chin rest).¹²⁴ This statement was probably due to the lack of options available for chin rest brands, or of strategies for raising chin rests, at that time in Europe. Dew also advised the use of a shoulder pad or shoulder rest to compensate for a player's neck length, and stated that the contour of these devices should match the shoulder's slope; placing a pad farther from the neck requires more thickness or height of this device, and this placement (far from the neck) enables the head to provide leverage.¹²⁵ For players with sloping shoulders, he recommended a shoulder rest (as opposed to a pad).¹²⁶

In an ethnographic study, Mabru (mentioned in Chapter 1) investigated the use of support in a youth ensemble; he found that players used shoulder rests to fit the collective image of a professional orchestra.¹²⁷ Mabru noted a distinction between soloists, who are allowed to experiment with eliminating the shoulder rest, and orchestral players (assumed to be more static in their playing than soloists), who need to use this device, to fit this collective norm.¹²⁸

Sources Advising Against Using a Shoulder Rest

In the Correspondence section of a magazine from 1987, a reader's response to an article from a previous issue featured arguments against shoulder rest use. The reader rejected shoulder

¹²⁴ Ronald Masin and Maria Kelemen, *Violin Technique: The Natural Way* (Buren, Netherlands: Frits Knuf, 1982), 31.

¹²⁵ Dew, 939.

¹²⁶ *Ibid.*

¹²⁷ Lothaire Mabru, "La mentonnière et le cousin" [The chin rest and the cushion] (Report of the research for the Mission of Ethnologic Patrimony, 1993), 102, accessed March 6, 2014, http://www.culturecommunication.gouv.fr/Media/Disciplines-et-secteurs/Patrimoine-ethnologique/Files/Rapports-de-recherche/Ethno_Mabru_1994_116.pdf.

¹²⁸ *Ibid.*, 105.

rests for the reason that they hinder body flexibility and “‘oneness’ with the instrument,”¹²⁹ but also for appearance reasons; these devices were referred to as “ugly and repellent contraptions.”¹³⁰ An article of viola professor Philip Tietze presented his correspondence with various viola pedagogues on this subject; some professors agreed with shoulder rest use, while some rejected it.¹³¹ Tietze cited creating a “false sense of security”¹³² for the left hand, and immobilizing the player’s neck, among arguments against shoulder rest use. Another opponent of shoulder rests was Menuhin; in his opinion, if the shoulder is “actively ‘clamped’”¹³³ it becomes “frozen.”¹³⁴ For players with long necks and “an unpronounced collarbone”¹³⁵ Menuhin accepted a shoulder rest or a folded cloth, but this should be touched gently; no pressure should be used.¹³⁶ During his student years, Rolland invented a kidney-shaped shoulder pad; his goal was to “fill the empty space between shoulder and instrument.”¹³⁷ However, his views on this subject changed later in life: in his aforementioned book, he and Mutschler advised against a shoulder rest for children, suggesting that they use a rolled up washcloth or a small wedge-shaped

¹²⁹ D. J. A. Musgrave, “Shoulder Note,” *Strad* 98, no. 1172 (December 1987): 915.

¹³⁰ *Ibid.*

¹³¹ Philip Tietze, “Finding the Right Set-Up: Advice from the Pros,” *American String Teacher* 50, no. 2 (May 2000): 74.

¹³² *Ibid.*

¹³³ Menuhin, *Violin: Six Lessons with Yehudi Menuhin*, 53.

¹³⁴ *Ibid.*

¹³⁵ *Ibid.*

¹³⁶ *Ibid.*

¹³⁷ Julia May Quick, “Violin Pedagogy of Imre Waldbauer” (DMA diss., University of Iowa, 1977), 65.

sponge.¹³⁸ According to Denig, Rolland disapproved of rigid shoulder rests even for adult students toward the end of his life.¹³⁹ Frisch contended that Rolland rejected the rigid shoulder rests because he thought they provided too much height, and because often the player tends to make his body conform to the shoulder rest's contour, causing tension and an inadequate instrument placement for that individual.¹⁴⁰

French violin pedagogue Dominique Hoppenot devised a teaching approach similar to that of Havas, based on awareness of the body's natural balances. Unlike Havas, Hoppenot rejected the shoulder rest, because she believed its use interferes with body balance.¹⁴¹ She contended that if the collarbone is locked when using a shoulder rest, the player's left side becomes inert.¹⁴² Hoppenot accepted a thin shoulder pad model for players who had not yet established a body balance; she stated that the answer to the question "shoulder pad or no shoulder pad?"¹⁴³ is not clear-cut, but it should serve the goal of unity between violin support and body balance.¹⁴⁴

¹³⁸ Rolland and Mutschler, 63.

¹³⁹ Lynne Denig, e-mail message to author, January 20, 2014.

¹⁴⁰ Gary Frisch, response to "Correlating Body Type with Shoulder and Chin Rests," *Violinist.com* (blog), December 30, 2013, accessed March 13, 2014, <http://www.violinist.com/discussion/response.cfm?ID=19644&show=all>.

¹⁴¹ Dominique Hoppenot, *Le violon intérieur* [The violin within] (Paris: Editions Van de Velde, 1981), 59.

¹⁴² *Ibid.*

¹⁴³ *Ibid.*

¹⁴⁴ *Ibid.*

In Dalton's aforementioned book, Primrose disapproved of inflexible shoulder rests made of steel, because they fix the instrument in one place; he preferred to be able to move the viola laterally.¹⁴⁵ According to Primrose, chin and shoulder should not be used like a vise.¹⁴⁶ However, in her master's thesis, Dinwiddie (introduced in Chapter 1) argued that in 1988, when the book was written, shoulder rests did not offer many options of adjustments; currently, it is easier to find a model that keeps the left shoulder free.¹⁴⁷ Primrose did not insist that students eliminate the shoulder rest if they experienced difficulties with this approach. Viola professor Pamela Goldsmith shared an anecdote in Tietze's article: while playing for Primrose as a student, he commented on her use of a shoulder rest "none of the top men use one;"¹⁴⁸ she replied she was not a man or a top player, and she felt uneasy without one. Primrose did not contradict her.¹⁴⁹

Wallfisch contended that the Baroque approach of not using a shoulder rest eliminates a "reflexive grip"¹⁵⁰ between head and shoulder. To enable a tilted placement of the violin, she used a wedge of chamois leather adjusted to the shape of the player's shoulder, and advised placing the instrument directly on the skin, to prevent it from slipping.¹⁵¹ This approach is similar to that of a contemporary player: renowned violinist Anne Sophie Mutter, who does not

¹⁴⁵ Dalton, 53; for disapproval of inflexible shoulder rests, also see Zweig, *String Pedagogy*.

¹⁴⁶ Ibid.

¹⁴⁷ Elizabeth Dinwiddie, "Viola Setup Variables" (master's thesis, University of Colorado, 2002), 10.

¹⁴⁸ Tietze, 77.

¹⁴⁹ Ibid.

¹⁵⁰ Wallfisch, 906.

¹⁵¹ Ibid., 907-9.

use a shoulder rest and believes the violin has to be in direct contact with her skin. With regard to technique aspects that change when eliminating the shoulder rest, Wallfisch mentioned vibrato, stating that both arm and wrist vibrato can be achieved; to this end, it is helpful to slightly raise the instrument.¹⁵² In her doctoral dissertation, Gwendolyn Masin also addressed playing aspects that are approached differently with and without a shoulder rest, citing the views of violin pedagogue Igor Ozim. According to Ozim, when using a shoulder rest, the thumb should move with the hand for shifting down, while for an approach without a shoulder rest, the thumb moves down the neck “before the rest of the hand;”¹⁵³ for playing without a shoulder rest, the thumb should be placed across the second finger in lower positions.¹⁵⁴ Masin contended that playing without a shoulder rest improves stance, since it is impossible to let the scroll droop for shifting down.¹⁵⁵ A response on a blog for violinists featured a neurological perspective on playing without a shoulder rest. According to the author, when shifting up from a lower to a higher finger, if no shoulder rest is used, the hand expands as the new finger reaches for the new note.¹⁵⁶ This is advantageous from a neurological standpoint, because a slightly stretched muscle enables the neurons to send more data to the brain, and gets into action more quickly, than a muscle in a neutral position.¹⁵⁷

¹⁵² Wallfisch, 909.

¹⁵³ Gwendolyn Masin, “Violin Teaching in the New Millenium” (PhD diss., Trinity College, Dublin, 2012), 190.

¹⁵⁴ *Ibid.*, 189.

¹⁵⁵ *Ibid.*, 186.

¹⁵⁶ Stephen Brivati, response to “Shoulder Rest Height,” *Violinist.com* (blog), December 11, 2005, accessed March 13, 2014, <http://www.violinist.com/discussion/response.cfm?ID=6700>.

¹⁵⁷ *Ibid.*

In an article, Laurel Thomsen cited arguments for both sides of the controversy. According to Thomsen, shoulder rest opponents contradicted the belief that a shoulder rest prevents the shoulder from raising: if a shoulder rest is used, the chin pressure caused by players reaching forward with the head requires counter pressure (thus, lifting) from the shoulder.¹⁵⁸ Without a shoulder rest, the thumb has a key role in support; it is placed farther under the neck of the instrument, which changes the angle between hand and fingerboard, thus affecting intonation, left-hand mobility, and vibrato.¹⁵⁹ Shoulder rest proponents stated that eliminating support from the left hand enables finger agility, lighter shifting, and certain types of vibrato.¹⁶⁰

Sources Accepting a Shoulder Rest, but not for Building up Height

In a research article, bioengineers Marco Rabuffetti et al. presented the effects of using various shoulder rests on the position of various upper-body parts. Violinists were measured by movement analysis methodology while playing a scale: first without a shoulder rest, then with the lowest setting, and then with the highest setting of a *Kun* shoulder rest.¹⁶¹ The authors found that most of the values were closer to reference anatomical values when using the higher setting.¹⁶² However, left shoulder flexion and pronation of left forearm increased, which is detrimental; researchers concluded that seeking an appropriate shoulder rest height involves a

¹⁵⁸ Laurel Thomsen, "To Shoulder Rest, or not to Shoulder Rest?," *Strings*, 1 May 2011, accessed March 13, 2014, <http://global.factiva.com.libezp.lib.lsu.edu/ha/default.aspx>.

¹⁵⁹ Ibid.

¹⁶⁰ Ibid.

¹⁶¹ Marco Rabuffetti et al., "Tuning of the Violin-Performer Interface: An Experimental Study about the Effects of Shoulder Rest Variations on Playing Kinematics," *Medical Problems of Performing Artists* 22, no. 2 (2007): 58.

¹⁶² Ibid., 64.

“trade-off value.”¹⁶³ Another conclusion was that more research is needed to determine whether adjusting the chin rest (as opposed to the shoulder rest) in height would be more beneficial for the purpose of accommodating individual variations.¹⁶⁴ This issue will be addressed in the following sources in this section, but especially in the next section of this chapter, “Customizing the Chin Rest.”

McCullough contended that the shoulder rest should not be built up to the point of filling the entire space between jaw and collarbone, since this immobilizes the A.O. joint and causes the player’s head to tilt backwards, which is a detrimental position from the standpoint of the Alexander Technique.¹⁶⁵ Occupational therapist Katy Kreager also advised against raising shoulder rests, for the reason of increasing abduction and internal rotation of the bow arm, which can lead to rotator cuff injury.¹⁶⁶ For long-necked players, she proposed the solution of a higher chin rest.¹⁶⁷ In an article, Roberts (mentioned in Chapter 1) cited violin teacher Barbara Greenberg, a key figure in the field of customizing support for young students. Greenberg advised against raising the shoulder rest, because of the detrimental consequence of raising the

¹⁶³ Rabuffetti et al., “Tuning of the Violin-Performer Interface,” 64.

¹⁶⁴ *Ibid.*, 65.

¹⁶⁵ McCullough, 40; for “overstabilization” of neck, back, and shoulders also see J. J. Kella, “A Guide to Preventing Musicians’ Occupational Injuries,” *Allegro* 89 (1989): 19.

¹⁶⁶ Katy Kreager, “Shoulder and Chin Rests” (Letter to the Editor), *Strings* (May/June 1999): 24.

¹⁶⁷ *Ibid.*

whole instrument's plane.¹⁶⁸ According to Greenberg, shoulder rests should have two functions: providing friction and traction, and filling the space between instrument's back and chest wall.¹⁶⁹

In her aforementioned master's thesis, Dinwiddie proposed a setup system based on principles of the Alexander Technique and somatology.¹⁷⁰ The author's goal was to create a standardized support system for different body types, which, according to somatology principles, can be classified into three main categories: endomorphy ("roundness and softness of the body"),¹⁷¹ mesomorphy (a "square hard body")¹⁷² and ectomorphy (delicate, linear features).¹⁷³ In most people, one category is dominant, but they also exhibit traits of the other categories. Dinwiddie had four models try six different shoulder rest brands. Pictures and comments (geared towards readers who are familiar with the Alexander Technique) were provided for every model with every brand, and the best choice for each was explained. Generally, Dinwiddie recommended placing the instrument itself (rather than the shoulder rest) on the collarbone; therefore, it could be concluded that she did not recommend the shoulder rest for the purpose of building up height, even though she did not state this directly.¹⁷⁴ For Model 1, an ectomorph (of

¹⁶⁸ Christopher Roberts, "How to Find the Perfect Student Chin & Shoulder Rest," *Strings*, 1 August 2011, accessed March 6, 2014, <http://global.factiva.com.libezp.lib.lsu.edu/ha/default.aspx>.

¹⁶⁹ *Ibid.*

¹⁷⁰ Dinwiddie, "Viola Setup Variables," 13; somatology is "the study of physical anthropology," undertaken by William Sheldon (1940).

¹⁷¹ *Ibid.*

¹⁷² *Ibid.*

¹⁷³ *Ibid.*, 14.

¹⁷⁴ *Ibid.*, 63.

a petite build, with square shoulders, a long neck for her stature, and a narrow jaw), the best option was *Bon Musica*, with slight alterations. For Model 2, mostly mesomorphic (tall, with long arms, broad shoulders, and a broad jaw), the best choice was *Bon Musica* with a slight alteration. For Model 3, with sloping shoulders, a short neck, and a medium jaw, the best choice was *Viva* with minor height alterations. Model 4, with a small body frame, featured a combination of ectomorphy (a long neck) and endomorphy (small shoulders, slightly sloping); the best option was *Wolf Forte Secondo* with minor changes (a lower setting enabling the instrument to rest on the collarbone, and a higher chin rest).¹⁷⁵

Like Dinwiddie, Freymuth did not recommend shoulder rests that lift the instrument from the collarbone; she believed they put too much strain on the deltoid muscle, due to the higher level of the instrument.¹⁷⁶ Freymuth contended that the shoulder rest should hook over the trapezius muscle, which prevents slippage, relieves clenching with the jaw, and enables an even distribution of the instrument's weight.¹⁷⁷ To this end, she suggested bending the shoulder side end of the shoulder rest to create a "hook"¹⁷⁸ (which is easiest with the *Wolf Forte Secondo* brand), and then twisting the device around the longitudinal axis, so that it can contact the player's body in an even manner. The screw feet might need to be bent as well.¹⁷⁹

¹⁷⁵ Dinwiddie, "Viola Setup Variables," 51-66.

¹⁷⁶ Freymuth, 59.

¹⁷⁷ Ibid.

¹⁷⁸ Ibid., 60.

¹⁷⁹ Ibid.

In the aforementioned study, Taylor contended that the shoulder rest is optional, and it should not be used to build up height.¹⁸⁰ For different players, it can have various functions: instrument stabilization, enabling the aforementioned tilt of the instrument (to the right), or facilitating a horizontal position of the fingerboard.¹⁸¹ According to Taylor, the shoulder rest should be like a “wedge”¹⁸² extending from the middle of the collarbone (as opposed to the acromion—the tip of the shoulder) to the upper part (as opposed to the lower part) of the sternum. This placement choice (enabled by moving the shoulder rest closer to the tailpiece) is due to the negative impact of the shoulder rest pressing on the acromion (blocking the whole shoulder girdle) and on the lower part of the sternum (causing this part to “collapse down and in”).¹⁸³ Taylor contended that it is detrimental to clamp the instrument diagonally between head and shoulder, since this creates tension in the neck, also affecting the hands (instead of freeing the left hand for playing—a commonly held belief about shoulder rests). Having the instrument rest on the collarbone is preferable, because of the vertical direction of support. To avoid the diagonal clamping, the main support should be provided by the chin rest.¹⁸⁴ Taylor adjusted shoulder rests in shape and size of the cushion, position, and height. One of the strategies was altering a commercial shoulder rest, by attaching materials such as chamois leather, wool, or anti-slip rubber, to modify the cushion’s shape.¹⁸⁵

¹⁸⁰ Faculty of Music (HKU), www.violinistinbalance.nl.

¹⁸¹ *Ibid.*

¹⁸² *Ibid.*

¹⁸³ *Ibid.*

¹⁸⁴ *Ibid.*

¹⁸⁵ *Ibid.*

The fact that there are three categories of sources recommending three different approaches with regard to shoulder rest customization could be considered as an inconsistency in the sources; however, this does not bear a negative connotation, since in all the three categories valid arguments are presented, which, for the most part, take into account the player's physical well-being. It can be concluded that this issue was extensively covered in the sources belonging to all the three categories.

In the first category, various sources recommended a shoulder rest with the purpose of building up height, for long-necked players; they argued against the idea of rejecting the shoulder rest for the reason of the influence on tone quality, and an ethnographic perspective revealed the use of shoulder rests as means of integrating into a collective image of professional orchestral players. Some of these sources recommended starting with the shoulder rest, as opposed to the chin rest, to adjust the instrument placement on the vertical plane.

Sources in the second category argued against using a shoulder rest, for reasons of physical comfort, influence on tone quality, *oneness* with the instrument, observance of the Baroque tradition, and appearance. One source stands out as a major inconsistency: the cosmetic aspect mentioned in the reader's response, which actually might not have seemed as contrasting and controversial in 1987 as it appears to be nowadays, in the light of the increased knowledge of injury prevention. Conversely, the majority of sources considered the player's physical well-being, rejecting the shoulder rest because of reasons such as preventing a static shoulder position, or neurological considerations. Other authors contradicted these opinions with arguments such as historical reasons (i.e. brands available in Primrose's time). Technique aspects that change when not using a shoulder rest (shifting, vibrato, thumb position, left-hand mobility) were discussed.

A third category of sources was comprised of those accepting a shoulder rest, not for the purpose of building up height, but for purposes such as: providing traction (to prevent slippage); accommodating the instrument tilt; and filling the space between back of the instrument and chest. Strategies of adjusting shoulder rests to serve these purposes were described. Some arguments against raising the shoulder rest were: it elevates the entire plane of the instrument, placing strain on both arms; the base of the instrument is lifted from the collarbone, which is an important balance point for support; and the instrument is clamped diagonally between head and shoulder, resulting in tension in neck, back, and arms. For long-necked players, most of these sources suggested building up the chin rest, which will be addressed in the next section.

Customizing the Chin Rest

Chin rests consist of two main parts: the top part, called *cup* in most sources, which can have various shapes and heights, and might be built from different materials (i.e. wood, plastic); and the hardware (two metal brackets) enabling the chin rest to be clamped to the instrument.

In her aforementioned DVD, Lieberman addressed chin rest customization in great detail. To determine the optimal placement of the chin rest on the instrument, Lieberman advised to turn and nod the head (as explained in the “General Considerations” section), and a chin rest should be in that exact place, to meet the jaw.¹⁸⁶ According to placement in relation to the tailpiece, Lieberman classified chin rests into three categories: chin rests clamping to the left of the tailpiece (which she did not recommend, since they might damage the instrument); chin rests clamping in the middle of the instrument, but with the cup placed to the left (which she considered better for the instrument), and centered chin rests (with the cup placed directly over

¹⁸⁶ Lieberman, *Violin and Viola Ergonomics*.

the tailpiece).¹⁸⁷ With regard to customizing the chin rest height, Lieberman considered how much space needs to be filled from on top.¹⁸⁸ If a player's body type requires to build up height from above, and no chin rest is high enough, she advised to add padding on top of the chin rest. Examples of commercial padding devices are the *Strad Pad* (useful for players with bony jaws) and the *Gel Rest*.¹⁸⁹ Lieberman also addressed chin rest shape; she mentioned the models with humps, which might be uncomfortable for some players. If this is the case, but the chin rest is a good choice in all other regards, the hump can be filed and sanded down (only for chin rests made of wood).¹⁹⁰ To avoid a static position of the head, the author suggested a chin rest with a broad plate and no hump, to allow for head mobility while playing.

In the aforementioned article, Lieberman recommended a broad model of chin rest for players with broad shoulders, and a centered chin rest for players with narrow shoulders.¹⁹¹ She mentioned strategies for building up the chin rest in height: adding foam pads or layers of cork under the feet.¹⁹² An ideal option is to have the chin rest custom-made: the author mentioned luthier and violinist Peter Purich in Montreal, who hand-carves chin rests for customers.¹⁹³

With regard to chin rest shape, Hoppenot, like Lieberman, preferred a flat chin rest. The reason for her choice was to avoid any tendency of thrusting the head forward to place the chin

¹⁸⁷ Lieberman, *Violin and Viola Ergonomics*.

¹⁸⁸ *Ibid.*

¹⁸⁹ *Ibid.*

¹⁹⁰ *Ibid.*

¹⁹¹ Lieberman, "The Importance of Setup," 41.

¹⁹² *Ibid.*

¹⁹³ *Ibid.*, 42.

in the chin rest.¹⁹⁴ Conversely, Menuhin's approach of playing without a shoulder rest required a chin rest with a "fairly prominent lip."¹⁹⁵ In an article, Dinwiddie also suggested a chin rest that "hooks"¹⁹⁶ under the player's jaw, for individuals with a pronounced jaw type.

In the aforementioned study, Alexander Technique experts found that the chin rest can be adjusted in placement, height, tilt, angle, and shape; to this end, they developed the *Chin Rest Testing Kit*.¹⁹⁷ Unlike Lieberman and Freymuth, they started with adjusting the chin rest, and asked the students to practice with substitute materials for shoulder rest (i.e. shelf liner), until they got used to the new chin rest. With regard to chin rest placement, researchers stated that for an optimal position, the jaw should drop into the center of the cup when the player rotates the head and nods; if the player only places part of the jaw in the cup, the chin rest is not in alignment with the best instrument placement for that player.¹⁹⁸ Regarding chin rest height, their goal was not to fill up the entire space between jaw and collarbone, but to enable players to secure the instrument with the jaw, and to allow for "plenty of room"¹⁹⁹ for head movement. The testing kit contained five chin rests of different heights; they selected one, then made gradual adjustments, which could be as fine as 1 mm (height was added by placing cork under the feet,

¹⁹⁴ Hoppenot, 56-57.

¹⁹⁵ Menuhin, *Violin: Six Lessons with Yehudi Menuhin*, 53; for a chin rest with such a shape facilitating the approach without a shoulder rest, also see Wallfisch, 909.

¹⁹⁶ Liz Dinwiddie, "Set-up: Fitting the Instrument to the Body, When All Bodies Are Different!," *American String Teacher* 57, no. 3 (August 2007): 39-40.

¹⁹⁷ Faculty of Music (HKU), www.violinistinbalance.nl.

¹⁹⁸ Ibid.

¹⁹⁹ Ibid.

once players released their old cramped habits).²⁰⁰ Chin rest tilt was adjusted by placing slanted corks under the feet. Tilt served the purposes of matching the jaw shape (pointed jaw shapes need more tilt towards the E String than square ones) and tilting the instrument towards the bow arm (thus, the chin rest should be tilted the opposite way).²⁰¹ With regard to angle and shape, Taylor stated that if these features are inadequate for the player, the instrument cannot be secured with the jaw; so, the player makes “searching”²⁰² movements with neck and jaw, which are detrimental. A “too-roomy”²⁰³ chin rest cup causes rubbing against the throat area; therefore, researchers used latex inserts similar to shoe insoles to determine the cup depth. They contended that the chin rest’s edge should match the jaw bone contour and depth.²⁰⁴ Finally, the researchers designed custom-made chin rests for each player, based on all these parameters; they stated that corks are only a temporary solution, and recommended a custom-made chin rest.²⁰⁵

In the aforementioned article, Freymuth stated her preference for centered chin rests with a hump.²⁰⁶ She found that children’s heads are proportionately larger than adults’; thus, a full-size chin rest can be used for small-sized violins (starting with the 1/8 size).²⁰⁷ If the violin is

²⁰⁰ Faculty of Music (HKU), www.violinistinbalance.nl.

²⁰¹ Ibid.

²⁰² Ibid.

²⁰³ Ibid..

²⁰⁴ Ibid.

²⁰⁵ Ibid.

²⁰⁶ Freymuth, 61.

²⁰⁷ Ibid., 62.

smaller than this size, and a matching centered chin rest is not available, Freymuth advised to fashion a platform by means of corks, molefoam, and moleskin, which should be attached (using moleskin) to the crossover part of a Guarneri chin rest.²⁰⁸ Like Taylor, Freymuth proposed the idea of a temporary chin rest to accommodate gradual changes in posture. She advised to build a hump or ridge where needed (using modeling clay), cover it with Saran Wrap, and over a few weeks make adjustments to the clay; the final version of this model can serve as a basis for a custom made chin rest.²⁰⁹ Another proponent of the centered chin rest was Galamian; he contended that this model would solve the issue of some players placing the head on the tailpiece, is more comfortable, and preferable from the standpoint of instrument construction.²¹⁰

Medical studies also support the use of a centered chin rest. Rabufetti et al. investigated the effect of chin rest positioning on players' movements while playing.²¹¹ Violinists were asked to perform several playing tasks alternatively with a lateral chin rest and a centered chin rest, both seated and standing. Researchers measured the movements of performers, and the movements of violin and bow; from these measurements, "kinematic variables fully describing the movements and posture"²¹² were computed. Results showed that the centered chin rest

²⁰⁸ Freymuth, 62.

²⁰⁹ Ibid.

²¹⁰ Galamian, 13.

²¹¹ Marco Rabufetti et al., "Experimental Study of the Effects of Postural and Functional Variations and of Chin-Rest Position on Playing Kinematics of Violinists" (paper presented at Ergonomics in Music: 12th European Congress and 3rd International Congress on Musicians' Medicine, Milan, May 8–10, 2008), in *Medical Problems of Performing Artists* 23, no. 3 (September 2008): 136.

²¹² Ibid.

allowed for less rotation of the head, which is closer to the anatomical neutral position; therefore, this model was considered seemingly more advantageous than the lateral one.²¹³

In the article presented in the first section of this chapter, Blum and Ritter also advocated the use of a centered chin rest; their reason was that this model might help prevent fiddler's neck, since a chin rest placed too far to the left places an extreme strain on the left jaw angle, while a centered chin rest causes the pressure to shift to the chin itself.²¹⁴ The authors also addressed chin rest materials: some wood types (i.e. ebony, rosewood) might cause an allergic reaction.²¹⁵ They recommended carving a wood that does not cause such a reaction, and using a modified plaster cast, or synthetic materials; other suggested strategies were padding or replacing the chin rest.²¹⁶ For players not using a chin rest, the authors believed that the abrasions of the violin's varnish, combined with rosin dust, might cause this reaction; therefore, they recommended using a cloth.²¹⁷ Hygiene was deemed very important: the chin rest, or the cloth, should be cleaned often.²¹⁸ Jennifer Caero and Philip Cohen also addressed fiddler's neck in an article presenting the case study of a college-level violin student. The authors identified two different types of

²¹³ Rabufetti et al., "Effects of Chin-Rest Position," 136; for the possible advantages of using a centered chin rest, also see Judith Ann Hirsch, W. D. McCall, Jr., and B. Bishop, "Jaw Dysfunction in Viola and Violin Players," *Journal of the American Dental Association* 104, no. 6 (June 1, 1982): 838-43.

²¹⁴ Blum and Ritter, 159.

²¹⁵ *Ibid.*, 158; for certain wood types causing allergies, also see U. F. Haustein, "Violin Chin Rest Eczema Due to East-Indian Rosewood (*Dalbergia latifolia* ROXB)," *Contact Dermatitis* 8, no. 1 (February 1982): 77-78.

²¹⁶ *Ibid.*, 159.

²¹⁷ *Ibid.*, 157-59.

²¹⁸ *Ibid.*, 159.

fiddler's neck. Type 1, on the jaw, is due to irritation caused by contact of the jaw with the chin rest; the authors recommended placing a cushion on top of the chin rest.²¹⁹ Type 2, on the collarbone, occurs where the chin rest brackets touch the player's neck, being caused by an allergy to nickel. The patient solved this problem by changing her chin rest to a *Wittner* hypoallergenic model (made of plastic).²²⁰

In a research article, Marla Okner, Thomas Kernozek, and Michael Wade investigated the effect of using different support devices, and of playing different musical repertoire, on the pressure and force that violinists exerted on the chin rest, and on the total area of contact between player's body and chin rest. Violinists were asked to play with their own setup, and then combining two shoulder rest types with three chin rest models; for each condition they played excerpts from a violin sonata by G. F. Handel, and from a violin concerto by Max Bruch.²²¹ Researchers found that chin rest model and piece played influenced all the variables for pressure and force: for the concerto, a greater loading on the chin rest was noted.²²² The authors had expected a centered chin rest to result in a lesser loading, but in fact it elicited a greater loading; the least loading was noted for a chin rest made of a spongy material and with a slightly greater contact area than the other models.²²³ The shoulder rest effect was not significant; therefore, the

²¹⁹ Jennifer Caero and Philip Cohen, "Fiddler's Neck: Chin Rest-Associated Irritant Contact Dermatitis and Allergic Contact Dermatitis in a Violin Player," *Dermatology Online Journal* 18, no. 9 (September 2012): 10, accessed March 14, 2014, <http://escholarship.org/uc/item/0t23p44w>.

²²⁰ *Ibid.*

²²¹ Marla A. O. Okner, Thomas Kernozek, and Michael G. Wade, "Chin Rest Pressure in Violin Players: Musical Repertoire, Chin Rests, and Shoulder Pads as Possible Mediators," *Medical Problems of Performing Artists* 12, no. 4 (June 1997): 112.

²²² *Ibid.*, 117.

²²³ *Ibid.*, 119.

authors concluded that it seemed more important to modify the chin rest than the shoulder rest, for customizing support.²²⁴ The authors contended that, apparently, minimizing pressure and force could be better from an injury prevention standpoint, but actually lessening this load might produce tension in other body parts, such as the left hand;²²⁵ this idea is consistent with the Alexander Technique principle that overly relaxing a certain muscle results in tension in another muscle.

With regard to customizing the chin rest, the views of Rolland and Mutschler were based on the “cantilever principle”²²⁶ applied to supporting the instrument. According to this principle, head weight should be used to “provide leverage on the chin rest,”²²⁷ and the collarbone provides an upward support for the violin. The leverage is better (thus, the instrument is easier to support) if the chin contact is farther back; this is why the chin rest should have a downward slope towards the scroll.²²⁸ The authors contended that the chin rest shape should include a low point on the left, and a “high ridge on the right side,”²²⁹ which should fit inside the jawbone, so that the chin rest can be pulled towards the neck for a secure support.²³⁰ Violinists with large, fleshy jaws were advised to use chin rests with a broad, flat shape; for long-necked players, high chin rests

²²⁴ Okner, Kernozek, and Wade, 119.

²²⁵ *Ibid.*, 121.

²²⁶ Rolland and Mutschler, 71.

²²⁷ *Ibid.*

²²⁸ *Ibid.*

²²⁹ *Ibid.*, 62.

²³⁰ *Ibid.*

were suggested; for those with short arms, the authors recommended center-mounted chin rests with the cup to the left, supposed to bring the violin fairly “high on the shoulder.”²³¹ The centered chin rest was not included; according to Denig, Rolland approved of this model for petite players, but it was not mentioned in this book because it does not have a “hill and valley”²³² shape, lacking the aforementioned downward slope.²³³

Based on Rolland’s principles, Denig and Frisch devised an innovative system of customizing chin rests. The aforementioned article presented the research that led them to develop *The Frisch and Denig Violin and Viola Chinrest Fitting System*.²³⁴ The authors observed about fifty violin students in northern Virginia area, took pictures and measurements, and tried out different chin rest models on various students. They found that most violins were sold or rented with a *Guarneri* or a *Kaufman* chin rest, which did not fit most students.²³⁵ According to the authors, an ill-fitting chinrest may cause the student to place his jaw on the crossover part of a chin rest (such as the *Guarneri* model) instead of in the cup. Since this crossover part is placed over the tailpiece, students used this chin rest (with a lateral cup) as a centered chin rest. However, research showed that only 10 % of the students needed a centered model (recommended for players with short arms, narrow shoulders, or both).²³⁶ Denig and Frisch

²³¹ Rolland and Mutschler, 62.

²³² Denig e-mail, January 20.

²³³ Ibid.

²³⁴ Frisch and Denig, “Violin and Viola Chinrest Fitting System,” Jonas Music Services, 2012, accessed March 14, 2014, www.chinrests.com.

²³⁵ Denig and Frisch, 46.

²³⁶ Ibid., 47.

believed that the chin rest should fit the player's jaw line: they identified three basic categories of jaws, within which there are variations. "Bony"²³⁷ jaws generally have straight lines and "very little padding on the jaw bone;"²³⁸ "fleshy"²³⁹ jaws feature a well-padded jawbone, and "in-between"²⁴⁰ jaws exhibit a jaw contour that is not clearly *bony* or *fleshy*. Researchers provided students with chin rests (rather than shoulder pads) to fill the gap between jaw and collarbone; height was added by "lifts"²⁴¹ of 5, 10, 15, 20, or 25 mm. Eight chin rests without the hardware were used as "toppers"²⁴² for the *lifts*. The models were chosen according to Rolland's aforementioned description.²⁴³ In the fitting process, researchers measured the student's neck to determine the *lift* size; a *topper* was chosen according to jaw shape, then paired with the *lift*; the researcher charted the jaw shape for every student, and noted which model was the best fit (i.e. the *Brandt* did fit many jaw types).²⁴⁴ Some changes were immediate; for instance, before the fitting, many students had the scroll drooping, and with the new chin rest, the strings stayed parallel to the floor.²⁴⁵

²³⁷ Denig and Frisch, 47.

²³⁸ Ibid.

²³⁹ Ibid.

²⁴⁰ Ibid.

²⁴¹ Ibid., 48.

²⁴² Ibid.

²⁴³ Rolland and Mutschler, 62.

²⁴⁴ Denig and Frisch, 51.

²⁴⁵ Ibid.

In 1968, orchestra director Norman Dearborn had foreshadowed the developments of chin rest customization accomplished by Denig and Frisch. According to Dearborn, chin rests vary in three ways: shape, height, and position on the instrument.²⁴⁶ The chin rest shape should fit one of four basic jaw shapes: round, square, pointed, or heart-shaped.²⁴⁷ Regarding height, Dearborn stated that the decision of building up support from on top (chin rest) or from below (shoulder rest) should be based on the ability of drawing a full length bow stroke in a relaxed manner.²⁴⁸ The author proposed that the chin rest contour shapes should be given certain labels, and different heights should be labeled by using a number code; teachers should purchase sample chin rests made of combinations of these shapes and heights, for students to try, and then order based on these labels.²⁴⁹ This idea is similar to the aforementioned system of *toppers* and *lifts* devised by Denig and Frisch.

In the article mentioned in Chapter 1, Denig addressed chin rest height, advising that there should be about one finger's width between jaw and chin rest when the player's eyes look forward (and not down or up).²⁵⁰ According to the author, if the player's left shoulder joint is flexible, a chin rest to the left of the tailpiece might be a good choice; if the player is not as

²⁴⁶ Norman Dearborn, "String Clinic: Chinrests and Shoulder Pads," *Instrumentalist* 23, no. 4 (November 1968): 74.

²⁴⁷ *Ibid.*, 73.

²⁴⁸ *Ibid.*, 74.

²⁴⁹ *Ibid.*, 76.

²⁵⁰ Lynne Denig, "Chin Rests-Small Accessories That Can Make a Big Difference," *Strings*, 1 November 2010, accessed March 6, 2014, <http://global.factiva.com.libezp.lib.lsu.edu/ha/default.aspx>.

flexible or has narrow shoulders, s/he might choose a chin rest slightly extending over the tailpiece (which also applies to violists, due to the breadth and weight of their instrument).²⁵¹

In the aforementioned article, Roberts cited Kerr (introduced in Chapter 1), who stated that with an adequate chin rest, the player should be able to stick the tongue out while having the instrument under the chin; a bit tongue indicates improper support.²⁵² The author also cited Greenberg, who contended that the teacher needs to notice how the student's instrument is balanced on the collarbone (i.e. if it fits evenly, or "settles at an angle");²⁵³ the chin rest should be used to address any imbalances.²⁵⁴ With regard to chin rest brands, Frisch disapproved of the fractional-size version of the centered model (i.e. the *Flesch*) because it is too high for children; it is most likely to cause the head to tilt to the right.²⁵⁵ Zweig recommended "low, round plastic chin rests"²⁵⁶ for small violins, and the *Teka* or *Guarneri* models for full-size violins;²⁵⁷ the latter choice was contradictory with the ideas of Denig and Frisch. Mabru presented the perspective of Baroque violinists: most of them do not use a chin rest, but they use a chamois leather piece instead, to protect the varnish.²⁵⁸

²⁵¹ Denig, <http://global.factiva.com.libezp.lib.lsu.edu/ha/default.aspx>.

²⁵² Roberts, <http://global.factiva.com.libezp.lib.lsu.edu/ha/default.aspx>.

²⁵³ Ibid.

²⁵⁴ Ibid.

²⁵⁵ Frisch blog.

²⁵⁶ Zweig, *String Pedagogy*.

²⁵⁷ Ibid.

²⁵⁸ Mabru, 125.

Therefore, the issue of customizing the chin rest was allotted an extensive coverage in numerous sources. Various sources recommended building up the chin rest, rather than the shoulder rest, to match the length of the player's neck. To customize the instrument placement on the vertical plane, some of these sources advised starting with the chin rest, rather than with the support device (if any) below the instrument. This approach is opposite to the one recommending to start with the shoulder rest, described in the previous section of this chapter; however, this inconsistency does not bear a negative connotation, since both approaches seem valid.

In many sources, chin rest positioning on the instrument was deemed a very important factor. Several sources, especially medical doctors, recommended a centered chin rest because it enables the head to be placed straight and facing forward, and reduces the risk of fiddler's neck by shifting the pressure from the jaw angle to the chin itself. However, according to other sources, a centered chin rest is beneficial only for players with a certain body type (i.e. short arms) and the fractional-size version is too high for young players' necks. This could be interpreted as an inconsistency in the literature; nevertheless, both arguments seem to be valid. It seems that for players who need to use a chin rest to the left of the tailpiece a compromise could be achieved: it is important to keep the full length of the neck when turning the head and nodding,²⁵⁹ and that players are taught to release head weight rather than use pressure, regardless of chin rest positioning.

Sources also discussed materials that chin rests are made of; some of these materials are important in the prevention of fiddler's neck. Several sources also mentioned specific brands: for instance, *Wittner* is beneficial in preventing fiddler's neck for players with allergies to nickel,

²⁵⁹ Faculty of Music (HKU), www.violinistinbalance.nl.

and *Guarneri* is a controversial brand. Shape of the cup is a key factor in chin rest choice; it should match the player's jaw shape. According to various sources, jaw shapes can be classified in several ways: fleshy, bony, or in-between; pointed or square; round, square, pointed, or heart-shaped. Some sources preferred chin rests with humps or with a ridge, for more pronounced jaw shapes or for the approach of playing without a shoulder rest, while other sources stated their preference for a flat chin rest, for reasons such as head mobility. Rolland and Mutschler preferred a *hill-and-valley* shape for weight distribution reasons. Tilt of the chin rest was also deemed important, for reasons such as accommodating the tilt of the instrument. Therefore, generally, sources show consistency with regard to these aspects; some inconsistencies can be observed regarding chin rest shape and a specific brand.

Various sources provided numerous strategies for customizing chin rests according to all these parameters (i.e. filing a wooden chin rest to modify its shape). Some sources based their preference for a certain type of chin rest on other reasons than physical well-being: instrument construction (a chin rest clamping laterally is not in an optimal place for the instrument), and, in the case of Baroque violinists (who do not use a chin rest), observance of tradition. This could be interpreted as an inconsistency, but without any negative connotations.

CHAPTER 3 METHODOLOGY

The first purpose of this monograph was to bring together the scattered array of literature and other materials—pedagogic, research-based, and anecdotal—presented in the previous chapter, about performance injury prevention (specifically, customizing upper string instrument support) into one source; and to organize and synthesize this literature on violin/viola support with the intention of identifying principal issues. Furthermore, I sought to compare the coverage and recommendations within the three aforementioned literature types, identifying consistencies and inconsistencies. To this end, it seemed important to develop a comprehensive bibliography of relevant literature, and synthesize the findings of these sources, so that they can be useful to upper string performers, teachers, and students.

The search techniques used to develop this bibliography were: library research, Internet searches, and personal communication with authors. The doctoral dissertation of Yun-Chieh Chou, addressing the application of Alexander Technique principles to double bass playing,¹ was used as a starting point. Its bibliography section was examined to find more sources, for which I searched both online, and in the LSU library. This way, I found McCullough's doctoral dissertation, mentioned in Chapter 2. During the years following my injury, I had studied various materials related to injury prevention, in an attempt to understand where my physical problems came from, and to find potential strategies of addressing them. Examples of such materials are: Lieberman's DVD, Horvath's book, and the Alexander Technique materials mentioned in Chapter 2, which became important sources for the present monograph. Previously, I had heard

¹ Yun-Chieh Chou, "When the Mouse Meets the Elephant: A Manual for String Bass Players with Application of the Philosophy and Principles of the F. M. Alexander Technique" (DMA diss., Louisiana State University, 2013), 187, accessed December 9, 2013, etd.lsu.edu.

about the journal *Medical Problems of Performing Artists*, so I searched within its website using keywords such as *violinists' injuries*. Articles that I found this way were searched for bibliographies, which led me to other sources. Other Internet searches included using the search engines *World Cat* and *Google Scholar*. In an attempt to find out additional information about some of the ideas in the book by Rolland and Mutschler (presented in Chapter 2), I posted on the Discussion Board of the *Violinist.com* blog, mentioned in Chapter 2; this way, I communicated with Gary Frisch, mentioned in Chapter 2, and I found out about the master's thesis of Elizabeth Dinwiddie and the ethnographic study of Lothaire Mabru (also mentioned in Chapter 2). I also have communicated via e-mail with Elizabeth Dinwiddie, Lynne Denig, and Gary Frisch, regarding their work related to the topic.

The second purpose of this monograph—assessing the perception of college-level violin and viola pedagogues (who are also proficient performers), teachers of pre-college string students (who teach a variety of ages and levels), and college-level violin and viola students, about injury prevention by customizing support, and gaining an insight into the strategies they use—was addressed by developing a survey based on the information revealed through the literature. I chose these three groups, because each of them represents a different aspect of the contemporary string world, and bringing them together seems to reflect the big picture of current string performance and pedagogy.

The first group was comprised of university pedagogues, who are also artist performers (or were at some time during their career). Many of them have had significant contact with the most accomplished string performers in the world. They have great influence on their students who themselves might become teachers (or orchestral players). The second group was comprised of teachers of pre-college string students—and more specifically, who teach a wide variety of

ages and levels. This contrasts with the more homogeneous groups of: college teachers, who work with advanced players only; and college students, who, more or less, are accomplished performers. So, this second group included teachers of individual violin or viola instruction (or homogeneous group instruction) at a pre-college level; their students may be children, adolescents, or adult amateurs. These teachers often are accomplished upper string performers, but they differ from university pedagogues with regard to the challenges that their students pose, in terms of customizing support. The third group was comprised of college students at the undergraduate and graduate level. These students might, or might not, teach at a pre-college level; for their own playing, they may have thought about issues related to injury prevention and to customizing support (or their teachers might have made them aware of these problems), or they might never have considered these details. For instance, during the years of my undergraduate studies, I would not have thought about most of these issues, and I did not think that the shape of my chin rest mattered (peers were telling me that it looked uncomfortable).

Thus, I expected the diversity of circumstances among these groups to allow for the possibility of gathering a broad range of information about customizing support for upper string instruments. Certainly, the three groups would allow for the triangulation of data.

The seventeen questions of the survey were developed on the basis of the information gleaned from the literature. To investigate the issue of customizing instrument support according to the physical needs of every player, I had researched the literature for the areas of: anatomical structures that constitute balance points or sources of support; what aspects of body positioning the setup will facilitate (i.e. if there is a need to watch the left hand); what positions of the body are optimal from an anatomical standpoint (i.e. if the head is to be kept completely straight and facing forward, or if other options are acceptable); how the instrument placement should be

customized for every player (so that the chin rest and/or shoulder rest can be chosen to enable this placement, rather than allowing these devices to dictate the instrument placement); how to customize the chin rests, shoulder rests, or other devices in order to achieve this optimal placement; which aspects of playing technique are influenced by instrument support; and what sources the beliefs (regarding instrument support) of teachers and players of upper string instruments are based on (i.e. expert opinion, or how they were taught). The survey questions were based on these aspects (each of them was allotted 1-4 questions), in the aforementioned order, which starts from more general aspects (i.e. anatomical structures as balance points), moves towards more specific details (i.e. customizing chin rests and shoulder rests) and concludes with the basis of the respondents' beliefs. Some of the questions addressed the difference between a static posture and positioning of the instrument and a posture that allows for flexibility, being a home base for the performer to return to if adjusting or repositioning during performance is needed.²

Before distributing the survey, I submitted it to five test respondents (professors and graduate-level students in violin performance) for feedback regarding the clarity and the relevance of the questions. Based on their suggestions, I made adjustments to the questions; the third draft of the survey was the final version. The survey was distributed through surveymonkey.com with the aim of acquiring samples of twenty college-level violin and viola pedagogues, twenty teachers of pre-college string students, and all of the violin and viola music majors at a large southern university. To this end, the survey was e-mailed to forty-five college-level violin and viola pedagogues, forty-five teachers of pre-college string students, and twenty-one students majoring in violin and viola performance (including undergraduate and graduate

² For the questions, please see Appendix 2.

students). These potential respondents ($N = 111$) were asked to complete the survey within three weeks. After the initial e-mail, eight college professors, nine teachers of pre-college string students, and four college students completed the survey. Ten days later, I posted the survey on the *Violinist.com* blog, after which four more college professors and nine more teachers of pre-college string students (total— $N = 13$) completed the survey. Two weeks after the initial e-mail, I sent a follow-up e-mail; after that date, eight college professors, nine teachers of pre-college string students, and ten college students completed the survey. Total respondents ($N = 61$) divided as follows: upper string college professors ($n = 20$); teachers of pre-college string students ($n = 27$); and upper string college students ($n = 14$). Therefore, the overall return rate was 55%, since 111 survey requests were sent out, and 61 were received back; however, this rate is perhaps misleading, because of posting the survey on the aforementioned blog to increase the responses. Due to the anonymous design of the survey, it cannot be determined if there were respondents who only saw the survey on the blog (as opposed to being part of the 111 respondents who received the initial e-mail), but, judging by the date of the responses, I assumed that the 13 respondents who completed the survey right after I posted it on the blog were not part of the initial group, and only saw it on the blog. Thus, a more accurate overall return rate, obtained by adding the number of the bloggers to the total number of the respondents notified by e-mail, would be 49% (assuming that 124 survey requests were sent out, and 61 responses were received).

My goal was to find out how the perceptions of the respondents compared to the findings gleaned from the literature. This question will be answered in the next chapter, by comparing the perspectives from the literature to the respondents' perspectives.

CHAPTER 4

RESULTS AND DISCUSSION

As stated in the previous chapter, the purpose of this monograph was two-fold: bringing together a scattered array of literature and other materials about performance injury prevention (specifically, related to customizing upper string instrument support) into one source, organizing and synthesizing this literature with the intention of identifying principal issues, and, furthermore, comparing the coverage and recommendations and identifying consistencies and inconsistencies in these sources; and assessing the perceptions of college-level violin and viola pedagogues, teachers of pre-college string students, and college-level violin and viola students, about injury prevention by customizing instrument support. Therefore, my research question was: how do the perceptions of upper string performers, teachers, and college students compare to the findings gleaned from the literature? In order to answer this question, I reviewed literature and other materials—pedagogic, research-based, and anecdotal—from the 1960s forward, and I devised a seventeen-question survey, which was answered by college-level violin and viola professors (who also are proficient performers of these instruments), teachers of pre-college string students (who teach a wide variety of ages and levels), and college students majoring in violin or viola performance, including undergraduate and graduate students. The results of the survey, and the findings of the literature review in comparison to the perspectives gained from the survey results, are presented in this chapter.

Survey Results

In order to create a user-friendly survey, the multiple choice format of questions seemed the most appropriate option. However, since my goal was to find out as many relevant details as possible, I thought to devise the questions so that they did not confine the respondents' answers

only to the choices I provided; this is why in most of the questions I have asked for other answers or an explanation. Thus, three different types of questions were devised: multiple choice questions not requiring additional details; multiple choice questions with one option requiring an explanation; and questions requiring explanations for every choice, which the respondents were asked to type in a text box. Therefore, some of the answers are conducive to numerical reporting, while other answers are conducive to qualitative reporting. For the latter, I looked for agreements and disagreements among the respondents, and I noted how the answers tended to cluster.

The questions are addressed in the order of their appearance in the survey; this order was preferred over grouping the questions according to their type, because it reflects the organization of the literature review. Single question results are reported. At the end of several related questions (where appropriate), I summarize findings. For the questions where numerical results are reported, a table presenting these results is followed by a discussion. In the tables, the choices for the questions are abbreviated; a list of the questions, with the complete choices, is provided in Appendix 2. To save space, the name of the second group—teachers of pre-college string students—was abbreviated to “Teachers of Pre-College.” In cases where totals do not match the reported respondent *N* and/or *n*’s (listed in Chapter 3), one or more respondents failed to respond.

Questions 1-5

Table 1. Question No. 1: In your opinion, the instrument should be supported:

	Diving Board	Bridge	Shoulder Rest	Other	Totals
College Professors	3	6	5	6	20
Teachers of Pre-College	6	7	9	5	27
College Students	2	3	7	2	14
Totals	11	16	21	13	61

The first question addressed anatomical structures as balance points for support. As stated in Chapter 2, the *diving board* approach signifies supporting the instrument only from the end button side (with jaw or chin and shoulder or collarbone), with no left-hand involvement. The *bridge* approach consists of supporting the instrument from both ends: end button side, and left hand. Usually, the sources recommending this approach were those advocating against a shoulder rest, or those accepting it for purposes other than building up height. Other sources—those recommending the shoulder rest to build up height—implied that the shoulder rest is used for support, since the shoulder rest, rather than the base of the instrument itself, rests on the player's collarbone and/or shoulder. For other possible options, an additional choice requiring an explanation was added. For the twenty college professors who answered this question, the majority of choices were: *bridge* approach, shoulder rest, and other options. From the twenty-seven teachers of pre-college, one third of the respondents chose the shoulder rest approach; the choices of the *diving board* and *bridge* approaches, respectively, comprised about one quarter of the total responses. From the fourteen college students, one half chose the shoulder rest approach; the other responses were approximately evenly distributed across the remaining choices. Therefore, it seems that the shoulder rest approach is the most popular among respondents.

With regard to the choice “Other,” a detailed explanation was required. The details provided by the respondents who chose this option were fairly similar across the three groups; therefore, their responses will be reported together, as opposed to separately for each group. From the thirteen respondents who chose this option, the majority of answers mentioned a combination between the *bridge* approach and the shoulder rest approach; some of them stated that the use of the shoulder rest is optional, according to the player's physique (i.e. short neck).

In their description of the *bridge* approach, some of these answers implied a preponderance of the end button side support, by applying head weight, which they recommended to be about ninety percent of the total instrument support. Slightly fewer responses indicated that the support type should depend on the player's anatomy, and, respectively, that the support type should alternate for the same player, according to the demands of the repertoire (i.e.: *diving board* for shifting down, *bridge* for staying in the same position, shoulder rest only if needed; "a little left-hand support" helps sometimes, but in certain passages the left hand needs complete freedom). Other answers included: the *bridge* approach (some advising the preponderance of the end button side support to be about eighty percent); the shoulder rest (mentioning that relaxation should be the guideline for the decision of using one or not), and basing the choice of support type on the piece played (i.e. virtuosic, as opposed to Baroque).

Table 2. Question No. 2: Thinking very precisely about supporting the instrument at its endpin side, you consider the support points to be:

	Jaw and Collarbone	Chin and Collarbone	Jaw and Shoulder	Chin and Shoulder	Other	Totals
College Professors	6	3	3	2	5	19
Teachers of Pre-College	14	3	5	1	4	27
College Students	3	2	3	5	1	14
Totals	23	8	11	8	10	60

Regarding anatomical structures as balance points for support, it seemed important to investigate the respondents' perspectives about how exactly the instrument is supported at its end button side. The commonly held belief is that upper string instruments are placed on the player's shoulder; for instance, when a young student places the instrument too much in front of herself (a

common habit among beginning students) the teacher's admonition (which I also used countless times) is "Violin on your shoulder, not on your chest!" However, numerous sources advised that the collarbone, rather than the shoulder, is a preferable balance point for support. Moreover, various sources featured the idea that the term *chin rest* is misleading, since the side of the jaw, as opposed to the chin itself, should be placed in the chin rest. Therefore, this question aimed to gain an insight into the respondents' views regarding these two aspects. It was assumed that the respondents might have other opinions besides all the possibilities of pairing the four aforementioned anatomical structures. For the groups of college professors and teachers of pre-college, the majority of respondents chose the jaw-collarbone pair, mentioned in numerous sources, especially in those advising against a shoulder rest. In the group of teachers of pre-college, the preference for this option (chosen by more than half of the respondents) was more evident than for the group of college professors, where the "Other" option was chosen by almost the same number of respondents as the jaw-collarbone pair. A fairly large number from the group of teachers of pre-college opted for the jaw-shoulder combination. The majority of the college students chose "Chin and shoulder," which was chosen by the fewest teachers of pre-college; moreover, this combination was not very commonly encountered in the literature review sources.

The details for the "Other" option were similar across the groups of college students and teachers of pre-college; therefore, these two groups will be reported together. Among the five answers from these groups, the most frequently mentioned aspect was that the manner of supporting the instrument at its end button side should be different for every student, according to body type. Other answers included: jaw and collarbone (i.e. the jaw should be used only for playing aspects such as shifting), for reasons such as keeping the left shoulder free for movement; and jaw (as opposed to chin, since placing the chin itself in the chin rest would cause

neck tension), collarbone, and “a little help” from the shoulder. Among the five themes emerging from the group of the college professors were: the combination between jaw, collarbone, and shoulder; instrument to be snugly placed against the player’s neck and resting on the collarbone; this approach depends on the position in which one is playing; jaw and chin and collarbone (mentioning both jaw and chin was possibly due to mobility of the head while playing).

Table 3. Question No. 3: You advise your students to:

	Keep Same Balance Points	Alternate	Totals
College Professors	5	15	20
Teachers of Pre-College	6	21	27
College Students	4	10	14
Totals	15	46	61

The idea of a support system based on flexibility and constant alternation of the amount of support from various sources in the player’s body, as opposed to a support system promoting a static posture, was addressed in numerous sources of the literature. As shown in the table above, responses are consistent with this idea. Three quarters of the college professors, approximately three quarters of the teachers of pre-college, and approximately three quarters of the college students chose the option of a support system allowing for alternating between balance points of support according to the demands of the repertoire, over the option of a static positioning.

Table 4. Question No. 4: When addressing the position of the head, your goal is to:

	Straight, Facing Forward	Nod Down	Rotate	Tilt	Combination	Totals
College Professors	6	1	5	2	6	20
Teachers of Pre-College	5	2	3	6	11	27
College Students	3	0	2	1	8	14
Totals	14	3	10	9	25	61

Having studied the Alexander Technique, I became aware of the importance of a felicitous head-neck relationship (fully explained in Chapter 1). Moreover, having suffered from cervical spine discomfort increased my concern for finding a way to position the head on the instrument in a way that is as close as possible to the human natural alignment. The problem is that, unless the player uses a centered chin rest, it is very difficult to position the head straight and facing forward; therefore, it seemed important to investigate what other positions of the head and neck are acceptable, or least detrimental than others. Most sources of the literature agreed with the idea that a minimal rotating and nodding of the head is less detrimental than other positions (i.e. tilting). This is why the last option of this question proposed a combination of different positions; an explanation was required. As shown in the table above, college professors' opinions were fairly evenly divided between: a straight, facing forward position; rotating; and a combination of choices. The groups of college students and teachers of pre-college showed a strong preference for the combination; the latter group also featured a fairly large number of answers being divided between tilting and the straight, facing forward position.

Regarding the combination choice, the group of college professors showed the greatest awareness of the detrimental consequences resulting from tilting the head, and the most evident preference for the combination of rotating and nodding (stated by half of the respondents who chose this option), mentioned in the literature. Other themes emerging from the answers in this group were: head mobility, differentiation of the head positioning according to player's body type, and the straight, facing forward position as a home base posture. The theme emerging the most frequently in the other two groups was that the head position depends on the requirements of the music played (i.e.: the string played on; the part of the bow used). In both groups, the combination of rotating and nodding was mentioned by a fairly low percentage of respondents,

which contrasts with the group of college professors. Teachers of pre-college also mentioned: head mobility (answer provided by a fairly large percentage of respondents); positioning being determined by the individual's body type; and a combination of the following positions: straight (facing forward) and slightly tilted to the left. The latter was also encountered in the college students' responses. Other themes emerging from the answers in this group were: a relaxed position; and tilting, but sometimes rotating, to watch the left hand for certain passages. The latter aspect was deemed in the literature as unnecessary, and even detrimental.

Table 5. Question No. 5: The position of the head should:

	Be the Same	Change	Totals
College Professors	2	18	20
Teachers of Pre-College	5	21	26
College Students	1	13	14
Totals	8	52	60

The theme of a position of the head that allows for mobility while playing, rather than a static posture, was frequently encountered in the literature. It was allotted a separate question, but it also emerged in the previous question, among the details provided for the last option. As reported for that question, a large number of respondents mentioned mobility of the head, and changing the head position according to the demands of the repertoire. For the current question, the table above shows the respondents' clear preference for a posture enabling head mobility, in all the groups; from the total number of respondents, almost ninety percent chose this option.

Summary of Responses to Questions 1-5

Therefore, with regard to general considerations about instrument support, respondents' views generally are consistent with the ideas from the literature. Respondents showed a preference towards using a shoulder rest to aid anatomical structures in the task of supporting the

instrument, and increasing head weight for shifting down; generally, they chose the jaw-collarbony pair as providing support at the end button side of the instrument. However, college students mostly chose “Chin and shoulder,” which shows inconsistency with the recommendations from the literature to place the jaw in the chin rest. The majority of respondents chose a support system allowing for alternating between balance points according to the demands of the repertoire, over a static positioning; and also a support system allowing for head mobility. With regard to head position, it seems that college professors are aware of the detrimental consequences of lateral tilting, and of rotating and nodding as being preferable, while teachers of pre-college and college students favored the tilting, which shows inconsistency with the recommendations from the literature. Watching the left hand as a desirable aspect emerged as a theme in the answers of the college students, therefore showing inconsistency with the suggestions from the literature.

Questions 6-8

Table 6. Question No. 6: The scroll should be placed:

	Parallel to Floor	Raised Upwards	Lowered toward Floor	Varying Angle/Other	Totals
College Professors	8	1	0	11	20
Teachers of Pre- College	16	2	1	8	27
College Students	8	0	0	6	14
Totals	32	3	1	25	61

With regard to customizing the optimal instrument placement for each individual, it seemed important to investigate the respondents' views about each of the placement planes mentioned in the literature: vertical, scroll angle, horizontal, and tilt. The vertical plane will be addressed later, since it relates to specific support devices (i.e. adding height to the chin rest, or to the shoulder rest). Therefore, this section of the survey starts with the angle of the scroll. The last option was related to the idea of a dynamic instrument support, which changes according to the demands of the repertoire; this idea was frequently encountered in the literature. As stated in Chapter 2, most sources recommended the scroll to be either parallel to the floor, or pointing upwards. The table above shows a strong preference for the *parallel* option, for the groups of college students and teachers of pre-college: more than half of the respondents from each of these groups chose this option. The remaining respondents from these groups gravitated toward the option of varying the scroll angle (or other options). Conversely, in the group of college professors, more than half of the respondents chose the latter option, while the majority of the remaining respondents preferred the scroll to be parallel to the floor.

For the option requiring an explanation, the most frequent statement across the three groups was varying the scroll angle according to the demands of the repertoire played. Specific details for this choice included: lifting the scroll for upward shifts (which was mentioned in the literature as well); this angle depends on the string that the bow is on, and on the stroke (i.e. scroll slightly pointing downwards for *sautillé*); avoiding to angle the scroll upwards in slow passages (for reasons of fatigue). Most of these answers included the home base position of the scroll being parallel to the floor. Other themes emerging from these respondents' answers were: flexibility; customizing this placement according to the player's body type, or skill; a different placement for violin (parallel to the floor) and viola (slightly pointing towards the floor).

Table 7. Question No. 7: To decide if the instrument should be angled more in front of the player or farther out to the left, you take into account:

	Arm Length	Bow at Frog	Comfortable Left Arm	Unstrained Perpendicular at Middle	Some/All /Other	Totals
College Professors	2	0	2	2	14	20
Teachers of Pre-College	6	1	3	6	11	27
College Students	2	3	2	5	2	14
Totals	10	4	7	13	27	61

The horizontal plane of placement was addressed in various sources of the literature. Authors mentioned the idea that it should be determined by arm length (thus influencing the player's ability to reach the tip of the bow); the concern for right rotator cuff injuries, or for playing cramped at the frog, was related to a placement too much in front of the player, which also makes left arm rotation difficult; and one of the procedures devised to determine instrument placement relied on the unstrained positioning of the bow perpendicular to the instrument (according to this procedure, when the bow is perpendicular to the strings, the elbow should also be bent at a right angle). Therefore, the choices of this question reflected these aspects; an additional choice, requiring an explanation, was provided for a combination of these aspects, or for other possible ideas of the respondents. As shown in the table above, the group of college professors indicated a clear preference for the choice of combination (or other aspects): almost three quarters of these respondents chose this option. Teachers of pre-college also favored this option, which was chosen by almost half of these respondents, while a similar percentage was divided between the choices of arm length and unstrained perpendicular bow placement. The latter option was preferred also by the group of college students, being featured in more than one

third of the answers from this group. Within this group, the choice of bowing comfortably at the frog was also allotted a fairly large percentage of responses.

Among the respondents who chose the last option, for the groups of college professors and teachers of pre-college, the most frequently encountered answer was “all of the above.” Teachers of pre-college also mentioned reaching the tip of the bow, stating that this aspect is more problematic than playing comfortably at the frog. For this question, reaching the tip was not provided as a separate choice, because I thought it was included in the aspect of arm length. Within this group, various combinations of the other choices were mentioned, and a theme that emerged was placing the instrument as close to the center of the player’s body as comfortable. In the group of college professors, another frequent answer was that this placement should vary according to the player’s body build; respondents also stressed the importance of arm length, and mentioned various combinations of the other choices. Other themes that emerged were: accommodating the “weaker side” of the player’s body, and details describing the comfortable positioning of the left side (placement of the elbow, and angle of fingers to string). The aspects of reaching the tip, and of the placement depending on the player’s body, also were mentioned in the responses of college students; moreover, in this group, advantages of placing the instrument farther out to the left (the player’s shoulders open up, and relaxed breathing is facilitated) are weighed against possible problems resulting from this placement (difficulty in reaching the tip).

Table 8. Question No. 8: The instrument should be:

	Tilted to Right	Flat	Alternating	Totals
College Professors	7	1	12	20
Teachers of Pre-College	10	5	12	27
College Students	3	4	7	14
Totals	20	10	31	61

The placement plane of instrument tilt was addressed in numerous sources in the literature review; most of these sources recommended a tilt to the right (towards the bow arm) to facilitate playing on the lower strings, or alternating between this tilt and a flat placement according to the demands of the repertoire. As shown in the table above, the majority of respondents in all the three groups chose the option of alternating, and this consistency across groups can also be remarked with regard to the lowest number of answers (the flat placement). Therefore, these results are consistent with the ideas in the literature.

Summary of Responses to Questions 6-8

Therefore, with regard to instrument placement, respondents' views generally show consistency with the ideas presented in the third principal issue of the literature, "Customizing Instrument Placement." Regarding the placement plane of scroll angle, the majority of respondents chose either "parallel to the floor," or varying the scroll angle according to the demands of the repertoire played (with the parallel placement as a home base posture); these aspects were also recommended by the majority of sources in the literature. With regard to the horizontal plane of placement, respondents' preferences gravitated toward taking into account an unstrained perpendicular bow placement in the middle of the bow, or a combination of all the specified options (arm length; bowing comfortably at the frog; comfortable positioning of left arm; and the aforementioned unstrained perpendicular bow placement). All these aspects were encountered in the sources; therefore, the responses show consistency with the findings from the literature related to this plane of placement. Regarding the placement plane of tilt, the majority of respondents favored alternating between tilting the instrument (to the right) and a flat placement, according to the demands of the repertoire; this idea is consistent with the findings from most of the sources in the literature.

Questions 9-13

Table 9. Question No. 9: Which of the following devices do you recommend to your students for instrument support?

	Chin Rest	Shoulder Rest	Both	None	Totals
College Professors	2	0	17	1	20
Teachers of Pre-College	1	1	24	1	27
College Students	0	1	13	0	14
Totals	3	2	54	2	61

This question started the section of the survey addressing specific support devices. In the literature, the most frequently encountered recommendations were either chin rest alone, or chin rest and shoulder rest (or another device underneath the instrument); Baroque violinists chose an approach involving neither a chin rest, nor a shoulder rest. However, I am aware of a fellow performer who used a shoulder rest alone, without a chin rest; this is why this option was added. I think that the choices for this question would have benefited from a better wording: “chin rest alone,” “shoulder rest alone,” and, for the last option, “playing without a chin rest and a shoulder rest.” From reading individual responses for the entire survey (I was able to see all the answers, in order, provided by the same person) my impression is that the respondents who chose the “shoulder rest” option did not understand that I meant the shoulder rest alone, with no chin rest. Moreover, the choice “none of the above” required an explanation; after reading the explanations provided by the two respondents who chose this option, I think they understood that the option meant not recommending a certain chin rest or shoulder rest model, or not having a preference for the student using a shoulder rest or playing without one. The table above shows consistency among the three groups regarding the clear preference for recommending both chin rest and shoulder rest; from the total number of respondents, almost ninety percent chose this option. The

two detailed answers for the last choice addressed customizing the shoulder rest or chin rest height according to neck length, and specific support options for different body types (i.e. both chin rest and shoulder rest for players whose shoulders are rolled forward; no shoulder rest for players with even shoulders).

Table 10. Question No. 10: If you have a preference for one of these support types, what are the reasons for your choice? (Note: If you answered D in question 9, please skip to Question 16).

	Body Type	Influence on Sound	Appearance	Some/All/Other	Totals
College Professors	11	1	0	7	19
Teachers of Pre-College	23	1	1	1	26
College Students	11	0	0	2	13
Totals	45	2	1	10	58

Aside from aspects related to injury prevention and physical comfort, some sources of the literature review also mentioned other reasons for their choice of a certain support system. In the case of the shoulder rest, the influence on the instrument's sound always was, and continues to be, the subject of a heated debate. Appearance was also mentioned as one of the reasons for rejecting the shoulder rest. As shown in the table above, there is consensus among the three groups with regard to the preference for the option of the student's body type. From the total number of the respondents, approximately three quarters chose this option. The choices of influence on sound and appearance were endorsed by a very low number of respondents.

The majority of respondents who chose the last option (which required an explanation) mentioned both student's body type, and influence on sound (for instance, one respondent stated that if a certain support system is advantageous from the standpoint of influence on sound, but it results in tension and pain, it should not be chosen). Other responses implied the need for the customization of support according to each individual (i.e. considering neck length and

instrument size). Among other themes that emerged in the respondents' answers were: ease of "hooking" the instrument; enabling the left arm to support the instrument; and ease of playing.

Due to the explanations required for every option, for Question 11 the respondents were asked to type their choice and the explanation in a text box. Therefore, this question is conducive to reporting the answers in a qualitative way. The question was: "If your answer to Question 9 was A or C, and you have a preference for a certain type of chin rest, it is based on the following reason." The choices were: material; brand; shape; some/all of the above; other (each of these choices required an explanation). Since the responses were fairly similar across the groups, they will be reported together, as opposed to separately for each group. Two respondents skipped this question; therefore, the total number of responses for this question was fifty-nine.

From the themes suggested by the choices, the majority of respondents mentioned shape; material and brand were also chosen by a fairly large number of respondents (with a lower percentage for teachers of pre-college). Reasons for choosing shape as the basis for the decision to use a certain chin rest included: enabling a "natural" posture and an appropriate instrument placement, thus accommodating every individual's physiognomy; comfort; enabling the instrument to be stabilized without downward pressure; the shape should complement the jaw structure; it should be chosen according to neck length and slope of the shoulder. Specific shapes (i.e. wide cup; models with a hump) were recommended; moreover, strategies of customizing shape (i.e. filing and carving) were provided. Regarding materials, respondents mentioned various reasons for considering this aspect important; for instance, it affects the player's physical comfort and the instrument's appearance; and the density of wood affects the instrument's sound. Specific materials were mentioned; ebony seems to be a controversial choice, since some

respondents recommended it, and some implied that it might be more likely to cause allergies than boxwood or rosewood. Wood was deemed preferable to plastic because it contributes to the instrument resonance, but plastic was recommended if wood causes allergies. Conversely, other responses implied that plastic is more likely to cause allergies. Strategies of preventing skin problems were mentioned: choosing a hypoallergenic chin rest, placing a *Gel Rest* on top of the chin rest, covering the chin rest or the metal clamps with a cloth, and replacing the metal clamps. These strategies are consistent with the recommendations from the literature review sources regarding fiddler's neck. Specific brands were mentioned: *Kreddle*, *Guarneri* (which is a controversial brand: some respondents recommended it, some advised against it), *Teka*, *Stuber*, *Ohrenform* (for long-necked players), and *Wittner*.

Other themes (which were not suggested by the choices for the question) also emerged from the responses. Positioning of the chin rest in relation to the tailpiece was deemed important for reasons such as: enabling both bow arm and left hand to play with ease; positioning the chin rest in the center or on the side should depend on the player's body; a centered chin rest was recommended for students with short arms; chin rests far on the left seem less comfortable; centered chin rests help keep the instrument high on the collarbone; clamping in the center is better for the instrument than clamping to the left of the tailpiece (idea that was encountered in the literature as well). The height of the chin rest was also mentioned; respondents suggested that it is preferable to raise the chin rest, rather than the shoulder rest, to accommodate for neck length (which is consistent with the recommendations of certain sources from the literature review); conversely, other responses implied that a too high chin rest can hurt the jaw. Adjustability also emerged as a separate theme; it can be accomplished in height, tilt, and position, for certain models. Weight was also mentioned, for the reasons of affecting both the

player's physical comfort, and the sound. Several respondents stated not having a preference for a particular brand, shape, or material; the chin rest should only fulfill its function.

Since Question 12 was similar to Question 11, the responses will be reported in the same manner. The question was: "If your answer to Question 9 was B or C, and you have a preference for a certain type of shoulder rest/other support device underneath the instrument, it is based on the following reason:" The choices were: material; brand; shape; some/all of the above; other (each of these choices required an explanation). Besides the themes suggested by the choices, a few other themes emerged, either as separate choices, or as reasons for the aforementioned choices. For instance, adjustability was provided by very few respondents as a choice in itself, while more respondents mentioned it as a reason for preferring a certain brand, or material. Since the responses were fairly similar across the groups, they will be reported together, as opposed to separately for each group. Three respondents skipped this question; therefore, the total number of responses for this question was fifty-eight.

The majority of respondents chose shape as the main factor for their preference regarding a certain type of shoulder rest, or another support device below the instrument. To justify the importance of shoulder rest shape, the respondents provided various reasons, such as: enabling a "natural posture" and a felicitous instrument placement for the particular player; accommodating individual differences regarding body build; providing stability of the instrument; and player's comfort. A fairly large number of respondents mentioned brand as the basis for their preference for a certain shoulder rest. Some answers included specific brands, such as: *Playonair*; *Kun*; *Bon Musica*; *Wolf Forte Secondo*; *Bravo*; *Mach*; *Wolf Forte Primo*; *Huber pads*; and *Everest*. Reasons for choosing specific brands included: flexibility for the *Playonair* (probably due to the

idea of not locking the instrument in one place, mentioned in Chapter 2); for the *Kun* brand: light weight, matching the curve of the shoulder, influence on the instrument's sound (very little impact due to its positioning on the instrument), and adjustability; stability and adjustability for the *Bon Musica*; and adjustability for the *Wolf Forte Secondo* and *Wolf Forte Primo* brands. Material was also chosen by a fairly large number of respondents as the basis for their decision to use a certain shoulder rest. In some of these responses, specific materials (i.e. sponge, foam, "firm materials," maple, brass, and chamois, rubber rug pad, or a towel for shoulder rest substitutes) were mentioned. Some respondents provided specific reasons, such as comfort, preventing skin allergies, or accommodating individual differences, for considering material as the decisive factor in their choice.

Various themes mentioned by a relatively low number of respondents will be mentioned because they seem to be noteworthy from the standpoint of injury prevention, and from the perspective of the literature review findings. Shoulder rest customization according to the student's body (including not using a shoulder rest for certain body types) was stated as an answer in itself (without mentioning any other aspects). Other themes included: how the shoulder rest works in combination with the chin rest (device which was deemed more important); shoulder rest height (preferably to be low); shoulder rest weight (affecting both the player's comfort, and the instrument's sound); providing stability for the instrument (especially when shifting down); and positioning on the instrument.

Question 13 also involved typing responses in a text box; therefore, it is conducive to reporting the answers in a qualitative way. The question was: "When a student experiences discomfort due to the manner of supporting his/her instrument, you suggest:" The choices were:

changing the chin rest; modifying the current chin rest (an explanation was required); changing the shoulder rest (or another device placed under the instrument); modifying/adjusting the current shoulder rest (an explanation was required); other (an explanation was required). Since the pattern of responses for the group of college professors differs from the other groups, this group will be discussed separately, and the answers in the other two groups (containing similar patterns) will be reported together.

In the groups of college students and teachers of pre-college, one respondent skipped this question; therefore, the total number of responses was forty. The majority of respondents mentioned the choice of changing the shoulder rest; examples of strategies regarding this choice are: replacing the shoulder rest with a sponge, and playing without a shoulder rest. A fairly large percentage of responses involved the choice of modifying or adjusting the current shoulder rest (or another device placed below the instrument). Examples of strategies for accomplishing this goal were: adding more foam to a shoulder pad sponge, and adjusting a shoulder rest in height and angle. The option of changing the chin rest was also chosen by a fairly large percentage of the respondents. Some answers implied discarding the old setup and starting back with a chin rest that fits the player's physical needs (and only then assessing the need for a shoulder rest); moreover, the current chin rest being too big was mentioned as a reason for changing the chin rest. Slightly fewer respondents chose the option of modifying the current chin rest. Adding padding to the chin rest clamps to prevent skin irritation, and covering the chin rest and the instrument's end button with a soft cloth, were mentioned as strategies of chin rest modification.

Aside from these themes suggested by the choices, several other themes emerged. A fairly large number of respondents stated that all the choices (or combinations between them) should be considered as possible options, and that they should be determined by the students'

physical characteristics, and by the specific issue (i.e. collapsed neck; squeezing with hands).

Another theme that emerged from the responses was that sometimes the issues are caused by a detrimental posture (i.e. the way of distributing weight), and establishing a good body balance, or finding a neutral position of the body, should be the starting point, before adjusting support devices. Moreover, some themes were: children's support system should be revised regularly; and before modifying support, instrument placement (i.e. placing the instrument on the collarbone, rather than on the shoulder) should be addressed.

In the group of college professors, most respondents stated the idea of all the choices as possible options, depending on the individual (i.e. neck length) and on the size of the instrument. A fairly large percentage of respondents chose the option of changing the chin rest: for instance, they suggested that the contour of the chin rest should be considered when applying this strategy. Respondents also mentioned the option of adjusting the current shoulder rest: for instance, they recommended adjusting it in height. The options of modifying the current chin rest (i.e. by changing its position) and changing the shoulder rest were mentioned by a fairly low percentage of respondents, in comparison to the other groups. Other themes that emerged were: playing with the head off the chin rest when shifting up; and determining the optimal instrument placement on the vertical plane (instrument closer to the player's face or closer to the collarbone) by finding the best balance points (i.e. the collarbone) and playing with a shoulder rest only (no chin rest), to get an idea about the decision of building up support from on top, or from below. The latter issue was also mentioned in the literature review, and will be addressed in the next question.

Summary of Responses to Questions 9-13

Therefore, with regard to the customization of specific support devices, generally the survey responses show consistency with the ideas from the literature. The large majority of

respondents showed a clear preference for recommending both a chin rest and a shoulder rest (or its substitute), which corresponds to the ideas from two of the categories of sources mentioned in the section “Customizing the Shoulder Rest” of the literature review. With regard to the reasons for choosing a specific support device, most respondents manifested their preference for the option “student’s body type;” influence on the instrument’s sound was mentioned, but only as being secondary to the aspect of accommodating the player’s physical well-being. These reasons are consistent with the findings from the literature.

Regarding the choice of a certain chin rest, most respondents mentioned shape, for reasons such as promoting a “natural posture.” Material was also chosen by a large number of respondents, who showed awareness of certain materials causing skin allergies; ebony was a controversial material; a hypoallergenic material was mentioned; respondents listed strategies of preventing skin problems (i.e. using a cloth). Specific brands were also mentioned by a fairly large number of respondents: *Wittner* (optimal from a fiddler’s neck prevention standpoint); and *Guarneri* (a controversial brand both in the responses, and in the literature). Positioning of the chin rest (i.e. in the center, or to the side of the tailpiece) emerged as another aspect from the answers; it should be determined by the player’s body type. Chin rest height was also deemed important; respondents mentioned building up this device. Another aspect emerging from the answers was adjustability (including tilt). All these details regarding chin rest customization are consistent with the literature review findings.

With regard to the shoulder rest choice, the large majority of respondents mentioned shape, for reasons such as enabling a “natural posture.” Brands were also listed in the answers, and were mostly the same brands as those suggested by the sources; some of them were chosen for their flexibility. Material (i.e. “firm materials;” a towel as a shoulder rest substitute) was also

mentioned by a large number of respondents, and was deemed important for reasons such as comfort. Adjustability (including in height) and height (preferably a low setting) emerged as themes in the responses, and show consistency with the approaches from the literature of using the shoulder rest to build up height, or, conversely, not using this device for this purpose. Flexibility regarding the use or non-use of a shoulder rest, in accordance with the player's body type, emerged as another theme, and is consistent with the three different approaches in the "Customizing the Shoulder Rest" section of the literature. Another emerging theme was "stability," corresponding to the function of preventing instrument slippage, mentioned in some of the literature sources. Overall, respondents' views regarding shoulder rest customization are consistent with the recommendations from the sources.

Regarding strategies of addressing support in the case of discomfort, most of the respondents chose: changing the shoulder rest (including playing without a shoulder rest); modifying or adjusting the current shoulder rest; changing the chin rest; considering all the choices (or combinations between them) as possible options, according to the students' physical characteristics and to the specific issue. A theme emerging from the responses was choosing a shoulder rest that enables the contact between instrument and collarbone, therefore being consistent with the third category of sources in the "Customizing the Shoulder Rest" section of the literature review. Adding or losing height was also mentioned, thus corresponding to the views of either the first, or the third category of sources in the shoulder rest customization section of Chapter 2. Strategies suggested for modification of devices show consistency with the literature review sources.

Questions 14-15

Table 11. Question No. 14: To fill the space between chin/jaw and collarbone/shoulder, you prefer to build up:

	Chin Rest	Shoulder Rest	Both	Totals
College Professors	7	4	9	20
Teachers of Pre-College	6	12	9	27
College Students	2	7	5	14
Totals	15	23	23	61

The issue of building up support from on top or from below the instrument was the subject of a controversy in the sources of the literature review. Some sources advocated building up the shoulder rest for long-necked players, while other sources advised against this, for the reason of raising the entire plane of the instrument and placing a strain on both shoulders. As shown in the table above, college professors preferred building up support symmetrically from on top and below; almost half of this group chose this option. A fairly large percentage of this group (almost one third) chose building up the chin rest, therefore showing consistency with the sources advising against raising the shoulder rest. In the other two groups, about half of the respondents chose the option of building up the shoulder rest, therefore showing agreement with the other category of sources.

Question 15 addressed the issue of how much to build up support. Previously, I had thought that the entire space between jaw and collarbone needs to be filled, in observance of a natural alignment of head and neck. I even measured my students' necks, and their violins' height combined with the support devices; my goal was to obtain the same height for both of these measurements. However, sources in the literature mentioned that some room is necessary,

to allow for flexibility of head and neck. Since this question involved a text box and detailed explanations, the responses will be reported in a qualitative way. The question was: “When building up those devices, your goal is to:” The choices were: filling the entire space; leaving some room for the head nodding on the chin rest (respondents were asked to specify about how much room); other (an explanation was required). Since the responses were similar across the three groups, they will be reported together. One respondent skipped this question; therefore, the total number of responses was sixty.

The large majority of the respondents (almost three quarters) chose the option of leaving some room, therefore showing consistency with the findings from the literature review sources. Reasons for choosing this option were: a natural, fluid feeling; freedom of neck; avoiding a rigid, restricting arrangement; not grabbing; correcting the position of a crooked neck (i.e. craning forward); head mobility and flexibility (not necessarily nodding); avoiding to be locked in one position; and enabling the head to rotate to either side, when needed. With regard to how much room to leave, respondents’ opinions varied. They mentioned measurements such as: minimum 2 cm; ½ inch; around 1 inch; a few mm to 1 cm, and less precise guidelines such as: not too much; leaving flexibility for playing double stops; small amount of room; just enough to prevent the instrument from pushing against the head; enough space to give freedom to the head-neck relationship; leaving space for nodding and shifting; enough space for the head movements to be flexible and free; “comfort zone” that depends on every player; just enough to prevent players from nodding down too far, or from craning the neck forward. One fifth of the respondents mentioned the choice of filling the entire space. Details and reasons for this choice included: comfortably filling the space; and preventing the shoulder from hunching. Other themes emerging from respondents’ answers were: a comfortable position (i.e. enabling the player to

support the instrument with head weight, in a relaxed way; allowing the instrument to “fall” to the neck), and that the degree of building up support should depend on the player’s physique.

Summary of Questions 14-15

With regard to customizing the instrument placement on the vertical plane (the decision of building up support from on top, or from below the instrument), college professors showed a preference for building up support symmetrically from on top and from below, and for building up the chin rest (about one third of this group chose this option). Therefore, responses in this group show consistency with the sources from the literature that advised against raising the shoulder rest to build up height. Conversely, in the other two groups, the majority of respondents chose building up the shoulder rest, therefore agreeing with the sources that recommended this option (sources from the first category in the “Customizing the Shoulder Rest” section of the literature review). Regarding how much to build up support, the large majority of respondents chose the option of leaving some room (i.e. “minimum 2 cm;” “small amount of room”) for flexibility, as opposed to filling up the entire space between jaw and collarbone.

Question 16

Question 16 addressed the influence of support on various aspects of playing. In the literature review sources, it was stated that a detrimental support results in tension of the entire arm structure (or, according to Alexander Technique principles, of the entire body, due to the paramount role of the neck), therefore affecting all aspects of playing. Sources that recommended playing without a shoulder rest described some differences in the playing technique when adopting this approach, as opposed to when using a shoulder rest. These differences mainly concerned left-hand technique aspects; this is why in the choices for this question only these aspects were mentioned (as opposed to aspects regarding bowing technique).

The question was: “In your opinion, the manner of supporting the instrument influences the following aspects of playing:” and the choices were: left-hand mobility; thumb position; vibrato; some/all of the above; other. An explanation was required for every choice, and the respondents were asked to type their answers in a text box. Therefore, the responses will be reported in a qualitative way. Since the responses were similar across the three groups, they will be reported together. One respondent skipped this question; therefore, the total number of responses was sixty.

The majority of respondents stated that all the aforementioned aspects are influenced by instrument support. The idea of wholeness, also mentioned in the literature review sources, was one of the reasons provided by a large number of respondents for this option (i.e. “everything is connected;” the whole body is influenced by support, as opposed to only the hands). Other reasons mentioned for this option were: student’s comfort; being free from tension; and a feeling of security when playing. Details about how the aforementioned aspects of playing are influenced by support included whether the left hand is used for instrument support, or not. This idea shows consistency with the approach from the literature review sources describing how the playing techniques change when not using a shoulder rest (therefore, the left hand being involved in supporting the instrument) as opposed to when using one (the left hand not supporting the instrument).

Left-hand mobility was mentioned by a fairly large percentage of the respondents. Details regarding this choice included: finger mobility (or agility); freedom of movement for the left hand; not landing the balance point fully on the left hand, or avoiding the use of too much left-hand support (for freedom of shifting); moving the hand from a higher to a lower string; and alternating between the *diving board* and the *bridge* approaches. A lower percentage of

respondents mentioned the option of vibrato. Reasons for support influencing vibrato and details regarding this influence were: tension in the shoulder and neck area will spread to the hands, thus impairing vibrato; improper support results in the fear of the instrument falling; vibrato requires a slight counter pressure with the thumb; vibrato differs according to thumb position (if the thumb is placed under the instrument's neck for support, a free vibrato is more difficult than if the thumb is on the side of the neck); too much left-hand support limits flexibility in hand, arm, and wrist, thus affecting vibrato; energetic arm vibrato requires more support at the end button side of the instrument; and vibrato is freer when the shoulder does not press. Thumb position was mentioned by a slightly lower percentage of respondents. Reasons of support influencing this aspect, and details, were: too much left-hand support results in the thumb creeping under the neck; for shifting, the thumb should be flexible; tension in the back and the arms (resulting from too much support at the end button side of the instrument) forces the thumb into an unnatural position, which compensates for a free vibrato; inadequate thumb position might cause problems in the hand muscles; thumb should help the left-hand fingers, as opposed to holding up the instrument; constant support from the thumb limits hand motion; thumb squeezing the instrument's neck is detrimental; and the thumb position in relation to the hand should depend on the student's physique (it only should be relaxed and not behind the fingers).

Other themes emerging from the respondents' answers were: intonation; the idea of creating a "solid support," providing stability (but no clamping of the instrument with the neck); support influences the instrument's tone, which results from the influence of support on the freedom of the bow arm; the left hand should be moved by the arm (i.e. in shifting); smooth and relaxed shifting, without finger pressure; support affects the left shoulder's socket mobility; inadequate support results in jaw tension.

Question 17

Table 12. Question No. 17: Regarding instrument support, body posture and positioning, what is the basis for your conclusions? Choose the primary basis.

	Expert Opinion	Research Evidence	Own Experience	"How I was Taught"	Other	Totals
College Professors	1	1	17	0	1	20
Teachers of Pre-College	2	4	18	2	1	27
College Students	0	0	13	1	0	14
Totals	3	5	48	3	2	61

Various sources in the literature advised against making decisions regarding instrument support on the basis of stigma, or the opinion of a pedagogue who recommended a certain support device (i.e. a shoulder rest) as a general rule, as opposed to an individualized approach. Therefore, it seemed important to investigate the basis of respondents' beliefs and conclusions about instrument support. As shown in the table above, the large majority of respondents (about eighty percent) chose the option of their own experience as performers and teachers. Among the other choices, research evidence was allotted a fairly higher number of responses.

Literature Results in the Context of Survey Responses

In this section I present the literature review findings from the perspective of the respondents' views. In this way, I answer the research question, and it will be determined how, if at all, this perspective differs from the literature findings as presented in Chapter 2, where the survey results had not been taken into account.

As stated in Chapter 2, most sources devoted extensive coverage of and made detailed recommendations about the majority of the five principal issues. Overall, sources showed consistency in their recommendations; in the instances where inconsistencies were found, they

generally do not bear a negative connotation, since sources presented valid arguments, taking into account the player's physical well-being.

The first of the principal issues addressed in the literature review was built around the idea that a detrimental support system may result in medical problems. Details pertaining to this issue were not included in the survey questions, since the respondents were not medical practitioners; however, some ideas related to patterns of tension and cramped postures, which are within the realm of a string player's basic knowledge about how the human body functions, apply to some of the survey questions. As stated in Chapter 2, according to numerous sources, a detrimental support might result in various medical problems, such as cervical strain, radiculitis, muscle spasms in the neck and upper back, problems in hands and wrists, headaches, TMD, bruxism, shoulder pain, fiddler's neck, and rotator cuff injury. According to Norris, radiculitis is caused by the compression of the spaces between the cervical vertebrae, which occurs when certain postures of the head (i.e. tilting) are maintained for an extended period of time, frequently (such as in the case of practicing).¹ As stated in the previous section of this chapter, for Question 4, the group of college professors showed awareness of the detrimental aspects of tilting the head; detailed answers included that tilting results in "a compression in the neck." However, college students and teachers of pre-college favored the tilted posture, which shows inconsistency with the recommendations from the literature.

As stated for the discussion of Question 11, respondents' awareness of certain chin rest materials causing skin allergies, and strategies suggested with regard to prevention of skin problems, are consistent with the recommendations from the literature review sources regarding

¹ Richard Norris, *The Musician's Survival Manual: A Guide to Preventing and Treating Injuries in Instrumentalists*, Third printing (San Antonio, TX: Crumrine Printers, 1997), 78.

fiddler's neck. For Question 13, in the groups of college students and teachers of pre-college, some of the answers also showed consistency with the strategies of modifying the chin rest in order to prevent fiddler's neck, encountered in the literature.

According to the majority of the sources, the aforementioned issues occur because certain support devices impose on the player postures that do not conform to the anatomical natural alignment. The idea of a "natural posture," or finding a "neutral" position of the body and then adjusting the support devices accordingly, was mentioned by respondents for several questions, such as: Question 11; Question 12; and Question 13 (in the groups of college students and teachers of pre-college). The first section of the literature review also revealed that Alexander Technique specialists noticed tension patterns resulting from detrimental support, which are likely to lead to injury over time, affecting various body parts. Due to the paramount importance of a free neck, tension in the neck, which is the result of clamping down with the chin to support the instrument, initiates a chain reaction of tension affecting the entire body.² In the survey, respondents mentioned this idea of wholeness for Question 16; numerous answers emphasized the influence of support on the entire body.

Therefore, with regard to this first principal issue, consistency can be noted both within the literature review sources, and between literature and survey responses (with the exception of teachers of pre-college and college students favoring the tilted posture). I learned numerous aspects of which I never was aware before; since I have not suffered from medical problems such as TMD or fiddler's neck, previously I had not researched any of these issues, and I would not have known what to recommend to a student who potentially would develop these problems.

² Faculty of Music (HKU), "Violinist in Balance," 2005, accessed December 10, 2013, www.violinistinbalance.nl.

The second principal issue of the literature review was comprised of general considerations regarding upper string instrument support. In Chapter 2, it was revealed that these aspects were allotted an extensive coverage in numerous sources, and that generally the sources showed consistency with regard to these details.

As stated in Chapter 2, the majority of sources agreed with the idea that a static positioning of the instrument is detrimental (hence the avoidance of the term *instrument hold*), and that there should be a “constant interplay”³ between the amount of support provided by various balance points in the player’s body. In the survey, this idea was reflected in the responses for Question 3, where approximately three quarters of the respondents chose the option of a support system allowing for alternating between balance points of support, over the option of a static positioning. Moreover, answers to Question 5, which addressed the mobility of the head while playing, show consistency with the idea from the literature; almost ninety percent of the respondents chose the option of the head position changing according to the demands of the repertoire.

Another major finding from the second section of the literature review was that sources mentioned both the *diving board* (from the end button side only) and the *bridge* (both from the end button side, and from the left hand) approaches of supporting the instrument; downward shifting was deemed the playing aspect requiring the most support from the head. A different approach was proposed in the section about shoulder rest customization; the sources that recommended the shoulder rest to build up height implied that the shoulder rest should be used for support. In the “Survey Results” section, the analysis of the responses for Question 1 showed

³ Barbara Conable and William Conable, *How to Learn the Alexander Technique: A Manual for Students*, 3rd ed. (Portland, OR: Andover Press, 1995), 133.

that the latter approach was the most popular among the respondents. The details for the choice requiring an explanation show consistency with the idea of using more head support for shifting down: respondents mentioned that the support type should alternate for the same player, according to the demands of the repertoire (i.e. *diving board* for shifting down, and *bridge* for staying in the same position); moreover, for the *bridge* approach, some answers suggested a preponderance of the end button side support in proportion of eighty or ninety percent. Actually, this seems to be a combination between the *diving board* and *bridge* approaches, due to the reduced participation of the left hand. In any case, both the literature review sources and the survey responses reflect the idea of using the most head weight for downward shifts.

With regard to which anatomical structures should constitute balance points for support at the end button side of the instrument, the majority of sources from the literature review mentioned the jaw and the collarbone. This pair of anatomical structures was also chosen by most of the respondents in the groups of college professors and teachers of pre-college. Maybe the choices for this question could have benefited from a better wording; I am not sure that all the respondents understood that by “chin” only the pointed end of the chin was meant (as opposed to the jaw). This is why most college students might have chosen “Chin and shoulder,” which was uncommon in the literature sources. Actually, thinking of the way I use my chin rest (which is a centered model with a fairly large cup), it seems that I place both my jaw and part of my chin in the cup (but I am not deliberately pressing with the chin); a similar approach might be the reason for these respondents’ choice. The teachers of pre-college who chose the jaw-shoulder pair might be in favor of using a shoulder rest. As stated in Chapter 2, Lieberman advised

rotating support responsibilities between several balance points, among which the shoulder;⁴ she is a proponent of using the shoulder rest (if the player's neck length requires it). Therefore, these respondents' answers show consistency with Lieberman's approach. Among this group (teachers of pre-college) and the one of college students, respondents who chose the "Other" option showed awareness of the detrimental consequences of placing the chin itself in the chin rest. The idea of the instrument resting on the collarbone (encountered in the college professors' responses) is consistent with the recommendations from the literature about the instrument being supported by balancing, rather than by gripping. Overall, it seems that responses to this question reflect the respondents' awareness of the suggestions from the sources (with the exception of the college students who might have misunderstood the wording of the choice).

With regard to head position, most sources agreed upon the aspect of head mobility during playing, which was discussed before, for Question 5. This aspect also emerged as a theme in Question 4; respondents mentioned that the head position should depend on the demands of the repertoire (i.e. the string played on). Positioning the head by minimal turning to the left and nodding was another major finding from the literature review: it was stated that nodding the head places less stress on the neck than a tilted placement.⁵ In the survey, this aspect was addressed in Question 4; the group of college professors showed the most awareness of the detrimental effects of tilting (bending the neck to the side) and of the advantages resulting from either a straight, facing forward position (at least as a home base posture), or slightly rotating and nodding down. It seems that the other two groups favored tilting, and even though responses mention "slightly

⁴ Julie Lyonn Lieberman, *Violin and Viola Ergonomics: Determine the Optimum Playing Position and Support for Your Body Type*, DVD, directed by Julie Lyonn Lieberman (Hal Leonard, 2010).

⁵ Faculty of Music (HKU), www.violinistinbalance.nl.

tilting,” teachers of beginners and college students would probably benefit from more information regarding the detrimental consequences of this posture.

The majority of sources in the literature review agreed upon the fact that watching the left hand should not be a goal of the head positioning. In Question 4, this aspect emerged as a theme in only one answer in the group of college students, which recommended watching the left hand for certain passages; even though the large majority of the respondents did not mention this aspect (therefore, it could be inferred either that they are aware of its detrimental consequences, or that they did not think about this), it seems that the information about this issue needs to be available on a larger scale, so that everybody becomes aware of these consequences. From my own experience, I know that it is difficult to give up visual control of the left hand; before my injury, I sometimes watched my left-hand fingers while playing (especially for large shifts), and when I resumed practicing, I often used a mirror to watch my posture (which includes the left-hand fingers). My students need to be reminded countless times not to watch their fingers. However, in the light of the findings from the sources, it seems that string players should work toward the elimination of this visual control of the left-hand fingers.

With regard to the reasons for preferring a certain support system, the large majority of sources from the literature review mentioned body type and comfort; a few sources also mentioned observance of tradition (i.e. for a Baroque approach), and tone quality (i.e. *skeletal resonance*). This idea will be developed more fully later, when addressing respondents’ reasons for preferring specific support devices.

Therefore, regarding the second principal issue identified in the literature (general considerations), consistency can be noted, for the most part, within the literature review sources; between literature review and survey responses, the general trend was consistency, but some

exceptions were noted. These differences pertain to head positioning: placement of jaw, as opposed to the chin itself, in the chin rest; the detrimental consequences of a tilted head position; and whether watching the left hand while playing is necessary, or not.

The third section of the literature review presented the sources' views about customizing the instrument placement (the third principal issue), which should precede adjusting specific support devices so that they enable this placement. The placement planes mentioned in the sources were: vertical; scroll angle; horizontal; and tilt. With regard to all these planes, a thorough coverage can be noted in various sources; generally, there was consistency among the sources. The vertical plane will be addressed in the discussion about specific support devices, since it is related to the decision of whether to build up the chin rest, or the shoulder rest (or its substitute). An all-pervasive idea was that a compromise between advantages and disadvantages of a certain placement (i.e. more advantageous for the left side, but not so comfortable for the right side) can be achieved by adjusting the instrument position while playing, according to repertoire demands. This reinforces the aforementioned idea of avoiding a static posture.

Regarding the angle of the scroll, most sources recommended the scroll to be either parallel to the floor, or pointing upwards; for certain aspects of playing (i.e. shifting upwards) they suggested adjustments of this angle during playing (i.e. lifting the scroll). While it is commonly acknowledged that a scroll drooping towards the floor is an indicator of poor posture, according to some sources, a too high placement of the scroll is also detrimental, since this posture (mostly resulting from the desire of imitating the posture of legendary violinists, such as Jascha Heifetz) does not fit every player's body, and it cannot be maintained without getting tired. Question 6 of the survey addressed this placement plane. The respondents' preferences were divided among placing the scroll parallel to the floor and varying the angle according to

repertoire demands (or other options). Most of the respondents who chose the latter option mentioned varying the angle (i.e. starting from a home base position with the scroll parallel to the floor). The details of: raising the scroll for upward shifts; and avoiding a too high scroll placement in slow, long passages for reasons of fatigue, show consistency with the literature review findings. Moreover, the suggestion of a differentiated placement for viola (slightly pointing to the floor) as opposed to violin (parallel to the floor) corresponds to the views of Primrose, who recommended a level placement, but acknowledged violists' difficulty in accomplishing this goal, therefore allowing his students to place the scroll pointing downwards.⁶ Overall, it seems that the respondents' views regarding the angle of the scroll are consistent with the literature review findings.

With regard to the horizontal plane of placement, the sources suggested that it can be changed while playing, by moving the scroll laterally. Question 7 addressed this plane of placement; the choices of parameters to be taken into account for this plane (arm length, comfortable bowing at the frog, comfortable positioning of the left arm, unstrained perpendicular position of the bow to the strings in the middle of the bow) were derived from the literature review findings. The majority of the respondents in the groups of college professors and teachers of pre-college chose "all of the above," therefore showing consistency with the ideas from the sources. A general idea emerged: placing the instrument farther out makes left arm rotation easier, but creates difficulties with regard to bowing straight in the upper half of the bow and reaching the tip. This aspect was encountered in the literature review. Moreover, respondents mentioned that instrument placement on this plane should be determined by every individual's

⁶ David Dalton, *Playing the Viola: Conversations with William Primrose* (New York: Oxford University Press, 1988), 47.

body build, which was also mentioned in the sources (i.e. for small and middle-sized players, the instrument should be closer to the center of the body, and for taller players, it should be placed farther out).⁷ Therefore, it seems that respondents are aware of the ideas encountered in the literature review sources with regard to the horizontal plane placement.

Regarding tilt, most sources agreed upon tilting the instrument to the right (the highest string closer to the floor than the lowest string), and mentioned that this angle can be adjusted while playing. In the survey, this plane of placement was addressed in Question 8. The large majority of respondents chose the option of alternating between a tilted and a flat placement according to the demands of the repertoire, and the fewest answers were allotted to the choice of a flat placement (all the strings level). Therefore, the respondents' views are consistent with the literature review findings.

Thus, within the literature review, for the principal issue of instrument placement, generally sources showed consistency, with one exception that could be considered as an inconsistency: the detail regarding the risk of fatigue associated with a too-high scroll (mentioned in a few sources). However, this statement does not necessarily contradict the idea of placing the scroll high; the sources recommend this position only for certain situations, therefore advising for a dynamic posture, which changes according to the repertoire demands. Between literature review and survey responses, the overall trend was consistency.

The final two sections of the literature review addressed customizing specific support devices: the shoulder rest, and, respectively, the chin rest. In the survey, the sections addressing specific support devices (Questions 9-13, and Questions 14-15) included questions regarding only one of these devices, but it was not easy to obtain a clear-cut distinction: in the detailed

⁷ Faculty of Music (HKU), www.violinistinbalance.nl.

answers related to the chin rest, many respondents mentioned the shoulder rest, and vice versa. Therefore, the same question will be discussed in relation to more than one section from the literature review, where appropriate.

In the literature review, the section addressing the customization of the shoulder rest was organized into three subsections, according to the following categories: sources recommending a shoulder rest; sources advising against using one; sources accepting this device, but not with the purpose of building up height for long-necked players (for which they advised building up the chin rest). The majority of sources showed a flexible approach, mentioning that for players with a particular physique a compromise can be made between the principles advocated by the source and the player's physical needs. The principal issue of shoulder rest customization was extensively covered in the sources recommending all the three approaches. Having found these three categories of sources, with different recommendations, could be considered as an inconsistency; however, this does not bear a negative connotation, since in all the three categories valid arguments were presented, which generally took into account the player's physical well-being.

The sources from the first of the three aforementioned categories recommended a shoulder rest with the purpose of building up height, for long-necked players. In the survey, Question 9 investigated the specific support devices preferred by the respondents. The majority of respondents recommended to use both a chin rest, and a shoulder rest; therefore, the responses show consistency with the suggestion to use a shoulder rest, from that particular category of sources. The idea of flexibility with regard to shoulder rest use can be inferred from the detailed answers (i.e. specific options for different body types, such as no shoulder rest for players with a certain physique). In the literature review, Lieberman also advised that players with a certain

body type (i.e. a short neck) might not need a shoulder rest, even though generally she recommended using one.⁸ Therefore, respondents' views regarding use of a shoulder rest and flexibility about this approach are consistent with the literature review findings.

Question 12 addressed the following characteristics of shoulder rests: material, brand, and shape. Most of the specific brands mentioned by the respondents were the same as those suggested by the sources (i.e. *Playonair*; *Kun*; *Bon Musica*; *Wolf Forte Secondo*). The materials listed by the respondents as acceptable for a shoulder rest substitute were similar to the options mentioned in the sources (i.e. rubber rug pad; chamois leather). Many responses mention the shoulder rest's adjustability (including in height); this can be an indicator of using the shoulder rest to build up in height. As for Question 9, details for this question also suggested the respondents' flexibility regarding use or non-use of a shoulder rest, in accordance with the player's body type. Thus, the respondents' perspectives with regard to shoulder rest shapes, brands and materials show consistency with the ideas from the sources.

Question 13 investigated the respondents' views on strategies for modification of support devices, including the shoulder rest. In the groups of college students and teachers of pre-college, responses included the details of adding more foam to a shoulder pad sponge, and adjusting a shoulder rest in height and angle; these strategies show consistency with the goal of adding height by building up support from underneath the instrument. In the group of college professors, respondents advised adjusting the shoulder rest in height; therefore, responses are consistent with the aforementioned aspects.

Question 14 investigated the issue of building up support from on top, or from below the instrument. In the groups of college students and teachers of pre-college, about half of the

⁸ Lieberman, *Violin and Viola Ergonomics*.

respondents chose the option of building up the shoulder rest, therefore showing agreement with this category of sources from the literature review. In the group of college professors, responses showed a preference for building up support symmetrically from on top and below, which might indicate the use of the shoulder rest to build up height (even though not as much as in the other groups). Therefore, respondents' views show agreement with the sources recommending the shoulder rest for the purpose of building up height. However, a fairly large percentage of the college professors group (almost one third) chose building up the chin rest, therefore showing consistency with the sources that advise against raising the shoulder rest.

Various sources from the first category of the "Customizing the Shoulder Rest" section of Chapter 2 recommended starting with the shoulder rest, as opposed to the chin rest, to adjust the instrument placement on the vertical plane. This idea also was encountered among the respondents' answers to Question 13; in the group of college professors, one detailed answer suggested placing the instrument on the collarbone and playing for some time with a shoulder rest only, to get an idea of the optimal instrument placement on the vertical plane. The response shows agreement with this order of addressing customization of the vertical plane placement, as advised by Lieberman.⁹ However, it is only one opinion out of twenty, which might indicate a minority of upper string players endorsing this option.

Sources from the aforementioned category argued against the idea of rejecting the shoulder rest for the reason of the influence on tone quality, and an ethnographic perspective revealed the use of shoulder rests as means of integrating into a collective image of a professional orchestra. The opinions of sources from this category contrasted with the views of the authors belonging to the second category of sources, as presented in the second subsection of

⁹ Lieberman, *Violin and Viola Ergonomics*.

the “Customizing the Shoulder Rest” section in Chapter 2. The sources from this second category argued against shoulder rest use, for reasons of physical comfort, influence on tone quality, *oneness* with the instrument, observance of the Baroque tradition, and appearance. A major inconsistency is comprised of the argument mentioning the cosmetic aspect (“ugly and repellent contraptions”),¹⁰ which probably was not as contrasting and controversial in 1987 as it seems to be nowadays, in the light of the continuing development of the performing arts medicine field. However, the majority of these sources considered the player’s physical well-being, rejecting the shoulder rest for reasons such as preventing a static shoulder position, or neurological considerations. Other authors contradicted these opinions with arguments such as historical reasons (i.e. the brands available in Primrose’s time did not allow for much freedom of the shoulder, while current brands are more likely to enable this freedom).¹¹

In the survey, the reasons for preferring a certain support type (thus implying the shoulder rest as well) were addressed in Question 10. The large majority of respondents mentioned the player’s physical comfort, or individual body type, as the reason for their choices (which could be either using, or not using a shoulder rest). In the detailed answers, influence on the instrument’s sound was mentioned, but only as being secondary to the concern for accommodating the player’s physical needs. Question 12, addressing the preferred characteristics of shoulder rests (material, shape, brand) could also be considered as a basis for respondents’ preferences regarding specific support types; for instance, shoulder rest shape should enable a “natural posture,” certain brands are chosen for their flexibility, materials should help

¹⁰ D. J. A. Musgrave, “Shoulder Note,” *Strad* 98, no. 1172 (December 1987): 915.

¹¹ Elizabeth Dinwiddie, “Viola Setup Variables” (master’s thesis, University of Colorado, 2002), 10.

accommodate individual differences and prevent skin problems, and weight influences both the player's level of comfort and the instrument's sound. In Question 15, which addressed the manner of building up support (from on top, or from below), one of the respondents contended that the shoulder rest creates "a rigid, restricting arrangement," which influenced the respondent's choice of playing without a shoulder rest. Therefore, all these responses reflect consistency with the literature review findings: the concern for the player's body was paramount, regardless of whether recommending a shoulder rest, or advising against it. The reasons of influence on the instrument's tone, or appearance, were mentioned by only a minority of respondents, which is consistent with the minority of sources mentioning these reasons in the literature.

The sources advising against a shoulder rest also discussed technique aspects (i.e. shifting, vibrato, thumb position, left-hand mobility) that change when not using a shoulder rest, as opposed to using this device. Question 16 investigated the influence of support type on various playing aspects, such as left-hand mobility, thumb position, and vibrato. Themes emerging from responses were similar to the aspects covered in the literature sources. According to a large number of respondents, the main difference in the aforementioned playing aspects results from using the left hand for instrument support (as in the case of not using a shoulder rest), as opposed to not using the left hand for this purpose (as in the case of using a shoulder rest); therefore, this idea shows consistency with the approach from the aforementioned sources. The idea that "everything is connected," stated by a large number of respondents, shows consistency with the details regarding the influence of thumb position (which changes when not using a shoulder rest) on left-hand mobility, intonation, and vibrato, mentioned in the sources. Intonation also emerged as one of the themes from the responses. Answers describing the thumb

position are similar to the description of how this position is different when using or not using a shoulder rest, mentioned in the sources. For playing without a shoulder rest, the thumb is placed farther under the instrument's neck for support purposes, while for using a shoulder rest, the thumb is placed on the side of the neck, which, according to proponents of shoulder rest use, enables a freer vibrato. Left-hand mobility and vibrato were also mentioned both in the sources, and in the responses to this question. The theme of support also influencing the right side (i.e. bowing technique; tone quality), which emerged from the responses, is consistent with the idea of wholeness, mentioned especially in Alexander Technique sources, which was discussed in the beginning of this section. Therefore, it seems that overall the responses show consistency with the information related to the aforementioned aspects of playing, from the literature.

Within the section "Customizing the Shoulder Rest" (in Chapter 2), a third category of sources was comprised of those accepting a shoulder rest, but not for the purpose of building up height. The functions fulfilled by this device, according to these sources, should be: providing traction (to prevent slippage); accommodating the instrument tilt; and filling the space between back of instrument and chest. In the responses for Question 12, several respondents mentioned their preference for a low setting of the shoulder rest. For Question 13, in the groups of college students and teachers of pre-college, replacing the shoulder rest with a sponge and playing without a shoulder rest were mentioned as options for changing the shoulder rest if the student experiences discomfort; both of these strategies imply losing height underneath the instrument (most of the sponge types seem to be lower than the majority of shoulder rest models).

Moreover, all the ideas mentioned previously, for the discussion of Questions 12 and 13 in relation to the first category of sources (those recommending to build up the shoulder rest), might apply to the third category of sources as well. "Adjusting the shoulder rest in height" might also

signify changing it to a lower setting, which enables the instrument's base to rest on the collarbone. With regard to the function of preventing the instrument from slipping, responses to Question 12 featured the theme of "stability," especially for downward shifts. Sources mentioned the following arguments against raising the shoulder rest: elevation of the entire plane of the instrument, which places strain on both arms; the instrument loses its contact with the collarbone; the instrument is clamped diagonally between head and shoulder, resulting in a chain reaction of tension. The aforementioned detailed answer to Question 13, which suggested placing the instrument on the collarbone and playing with a shoulder rest only, implies the importance of using a shoulder rest that enables the contact between instrument and collarbone. Therefore, respondents' perspectives are consistent with the ideas from this category of sources.

For long-necked players, most of these sources from this third category suggested the strategy of building up the chin rest, rather than the shoulder rest. In the survey, Question 11 featured this theme emerging from respondents' answers. For Question 12, one of the emerging themes was that the functioning of the shoulder rest should be considered only in combination with the chin rest, device which was deemed more important. For Question 14, in the group of college professors, the fairly large percentage (almost one third) of respondents who chose building up the chin rest shows consistency with this category of sources; moreover, the majority of respondents from this group chose building up support symmetrically, which might indicate less height for the shoulder rest than if they would have chosen the option of building up the shoulder rest alone. Thus, respondents' views are consistent with the findings from this category of sources.

Therefore, the literature review featured three different categories of sources: those recommending a shoulder rest, possibly for the purpose of building up height; those advising

against a shoulder rest; and those accepting a shoulder rest, but not for the purpose of building up height. This could be interpreted as an inconsistency; moreover, the argument mentioning shoulder rest appearance constitutes a major inconsistency with the other arguments used in sources advising against a shoulder rest. Respondents' opinions seem to be divided among these three approaches, thus reflecting the perspectives from the literature. The detailed responses that mentioned adjusting the shoulder rest in height could be interpreted as implying either building up height (therefore agreeing with the first category of sources), or losing height (therefore suggesting the third approach from the sources).

None of these approaches was deemed superior to the principles of the other categories, as long as it was justified by arguments regarding the player's physical well-being (as opposed to arguments such as the aforementioned cosmetic aspect). This variety in approaches related to shoulder rest use or non-use can be considered as illustrating the idea that there are several alternative ways to play successfully. For instance, soloists representing the past generations, such as Isaac Stern and Jascha Heifetz, rarely used a shoulder rest; the idea mentioned by Dinwiddie in regard to Primrose's views (during the past decades, it was more difficult to find a shoulder rest allowing for freedom of shoulder)¹² might be the reason for this approach. Actually, with regard to Heifetz's approach, Dew cited Karen Tuttle, who observed one of the legendary violinist's performances, and noticed that he used a shoulder pad under his jacket.¹³ Conversely, nowadays, soloists such as Gil Shaham, Joshua Bell, Nicolai Schneider, Janine Jansen, and Julia Fischer use a shoulder rest.

¹² Dinwiddie, "Viola Setup Variables," 10.

¹³ Robert Dew, "Technique without Tension," *Strad* 106, no. 1265 (September 1995): 937.

Legendary violinist David Oistrakh did not use a shoulder rest; he was a relevant example of switching between the *diving board* and *bridge* approaches with great ease. He moved his head deliberately to loosen up, in order to prevent clamping down with the neck; moreover, in the third position, he seemed to support his violin by resting it on the palm of his left hand, using a wrist vibrato. However, Oistrakh's physique (i.e. short neck; extremely fleshy jaw) was conducive to this approach of not using a shoulder rest, while it seems that for a long-necked player with a bony jaw it would not be a good idea to eliminate the shoulder rest only because of the desire to sound like Oistrakh.

Thus, between literature review and survey responses, consistency can be noted with regard to the principal issue of customizing the shoulder rest.

The last of the principal issues identified in the literature was customizing the chin rest. An extensive coverage of this issue in the literature could be noted; moreover, the general trend was consistency, with the exception of details pertaining to chin rest positioning, specific brands, and chin rest shape.

Various sources discussed in the section "Customizing the Chin Rest" of Chapter 2 proposed the same idea as the last category of sources from the section addressing shoulder rest customization: raising the chin rest, as opposed to the shoulder rest, for the purpose of building up in height. Therefore, the aforementioned ideas, featured in the survey, with regard to raising the chin rest, apply to these sources and recommendations as well. To customize the instrument placement on the vertical plane, some of these sources recommended starting with the chin rest, rather than with the support device (if any) below the instrument. This approach is opposite to the one recommending to start with the shoulder rest (previously described); however, this inconsistency does not bear a negative connotation, since both approaches seem valid. For

Question 13, one of the themes that emerged from the responses was discarding the old setup and starting back with a chin rest that fits the player's physical needs, before figuring out the type of support needed from below the instrument. Other details related to chin rest height were included in the responses to Question 11; respondents stated that height is important, and one of the themes emerging from the answers was that a too high chin rest might hurt the jaw. It seems that this statement does not necessarily contradict the idea of building up the chin rest; the discomfort might be influenced by various factors, such as jaw shape, chin rest shape, material, or the type of device (if any) used underneath the instrument. Overall, it seems that respondents' views about chin rest height are consistent with the ideas from the literature.

In the literature, chin rest positioning on the instrument (in relation to the tailpiece) was deemed as a very important factor. Several sources, especially medical doctors, recommended a centered chin rest since the head can be placed straight and facing forward, and this positioning helps prevent fiddler's neck by shifting the pressure from the jaw angle to the chin itself. However, other sources stated that a centered chin rest is beneficial only for players with a certain body type (i.e. small and middle-sized players; players with short arms) and the fractional-size version is too high for children's necks. In the survey, positioning of the chin rest emerged as one of the themes from the answers to Question 11. Respondents mentioned the importance of an adequate chin rest positioning for the customization of the optimal instrument placement according to the player's individual physical characteristics. Moreover, details provided in the responses show that the respondents based their opinions about chin rest positioning (i.e. in the center, or to the side of the tailpiece) on the player's body type; for instance, a centered chin rest was recommended for players with short arms. These ideas show consistency with the findings from the literature review sources. The responses to the same

question included other considerations regarding chin rest positioning: a centered chin rest helps keep the instrument high on the collarbone, and chin rests far on the left seem less comfortable (probably because of requiring more rotation of the head). Positioning was also viewed from the perspective of instrument construction: responses to Question 11 included details about the models clamping to the left of the tailpiece posing the danger of instrument damage (if overly tightened); therefore, models clamping in the center of the instrument were recommended. This statement is consistent with recommendations from various sources, which mentioned that a chin rest clamping laterally is not in an optimal place for the instrument.

The respondents' preference for centered chin rests is consistent with the literature review findings. This also confirms one of my preconceived notions about this study; I thought that a centered chin rest, like the model I use, enables a more natural positioning on the head than lateral chin rest models; at the same time, I was aware that the centered chin rest does not work for every body type (because of my short arms and narrow shoulders, in my case this option proved to be a good fit). However, for tall players, or players with long arms (for whom a centered chin rest is not the best option) it seems that a compromise can be achieved, by using a chin rest to the left of the tailpiece, but placing the jaw in the chin rest by keeping the full length of the neck when turning the head and nodding, and releasing head weight rather than using pressure.

Sources also discussed chin rest materials; some of these materials were deemed important in the prevention of fiddler's neck. In the survey, responses to Question 11 show an overall consistency with the recommendations from the literature. As stated in the beginning of this section, respondents showed awareness of certain chin rest materials causing skin allergies, and of strategies suggested with regard to prevention of skin problems. Ebony was a

controversial material (some respondents advised against it, while other respondents recommended it). Boxwood and rosewood were deemed preferable in some answers; however, rosewood was the subject of a case study presenting a patient's allergic reaction, in the literature review.¹⁴ In some responses, wood was considered more likely to cause skin problems than plastic, while in other answers plastic was thought to be more detrimental to the skin. The literature review findings revealed that a hypoallergenic material is the best solution for this problem; this material was also mentioned in the responses to Question 11. The strategies suggested in the detailed responses for this question (placing a *Gel Rest* on top of the chin rest, covering the chin rest or the metal clamps with a cloth, and replacing the metal clamps with clamps made of another material) are consistent with the recommendations from the literature regarding fiddler's neck. Moreover, in Question 13, the strategies suggested for chin rest modification (i.e. to add padding to the chin rest clamps) show consistency with the literature.

Various sources in the literature also mentioned specific brands: for instance, *Wittner* is beneficial in preventing fiddler's neck for players with allergies to nickel, and *Guarneri* proved to be a controversial brand. Respondents' answers to Question 11 mentioned most of the brands listed by the sources in Chapter 2; responses to this question included the *Wittner* brand, and for the *Guarneri* brand, the respondents' opinions were divided between recommending it and advising against it, which also occurred in the literature. Therefore, survey responses show consistency with literature review findings, with regard to this aspect of chin rest customization.

In the literature, shape of the chin rest's cup was deemed a key factor in chin rest choice; sources stated that it should match the player's jaw shape (several possibilities of jaw shape

¹⁴ U. F. Haustein, "Violin Chin Rest Eczema Due to East-Indian Rosewood (*Dalbergia latifolia* ROXB)," *Contact Dermatitis* 8, no. 1 (February 1982): 77-78.

classification were provided). In the survey, the majority of responses to Question 11 mentioned shape of the chin rest as being a significant reason for the choice of a particular model. To justify their answers, respondents listed reasons such as a “natural posture” and the need for the chin rest shape to complement the structure of the player’s jaw. These ideas are consistent with the findings from the literature. Moreover, for Question 13, in the group of college professors, changing the chin rest was suggested to improve students’ comfort; for choosing the new device, respondents advised taking into account the contour of the chin rest and the angle of the head to the chin rest, therefore implying chin rest shape as an important factor. Specific chin rest shapes preferred by the sources were: chin rests with humps or with a ridge (for more pronounced jaw shapes, or for the approach of playing without a shoulder rest) or flat shapes, for reasons such as head mobility. In the survey, responses to Question 11 mentioned specific shapes (i.e. wide cup; models with a hump); moreover, for Question 10, responses included ease of “hooking” the instrument to justify the preference for a certain support system (also, in some sources, the chin rest with a ridge was chosen because of providing a “hook”¹⁵ needed for the approach of not using a shoulder rest). Therefore, respondents’ views on chin rest shape show consistency with the literature. The strategies provided by various sources (i.e. filing a wooden chin rest to modify its shape) are consistent with the strategies of customizing chin rest shape (i.e. filing and carving) mentioned by the survey respondents, for Question 11. Therefore, survey responses show consistency with the literature, with regard to customization of chin rest shape.

In the literature, the chin rest tilt was deemed important, for reasons such as accommodating the tilt of the instrument. For Question 11 of the survey, adjustability of the chin rest (which can be accomplished with regard to several aspects, including tilt) emerged as a

¹⁵ Elizabeth Wallfisch, “Restless World,” *Strad* 115, no. 1373 (September 2004): 909.

separate theme; therefore, there is consensus between sources and survey responses, regarding the importance of this aspect.

Therefore, with regard to the principal issue of customizing the chin rest, within the literature review sources, the overall trend was consistency, with the exception of chin rest positioning. Between literature review and survey responses, generally there is consistency; the controversial details from the literature (i.e. the *Guarneri* brand) tend to be controversial in the survey responses as well.

Question 15 of the survey, investigating the extent to which support should be built up, can be considered as related to the head position issue; however, it was not discussed previously (i.e. together with Question 4), because it also pertains to the height of specific support devices. This is why it is presented after having discussed these devices (i.e. the chin rest and the shoulder rest). In the literature review, sources showed consensus by mentioning that leaving some room (as opposed to filling the entire space between jaw and collarbone) is necessary, to allow for flexibility of head and neck. This option was also chosen by the majority of the respondents; therefore, the survey responses are consistent with the recommendations of the sources. With regard to how much space to leave for nodding the head, or for flexibility, literature review sources stated guidelines such as “one finger’s width;”¹⁶ allow for “plenty of room”¹⁷ for head

¹⁶ Lynne Denig, “Chin Rests-Small Accessories That Can Make a Big Difference,” *Strings*, 1 November 2010, accessed March 6, 2014, <http://global.factiva.com.libezp.lib.lsu.edu/ha/default.aspx>.

¹⁷ Faculty of Music (HKU), www.violinistinbalance.nl.

movement; chin lowered ½ to 1 inch;¹⁸ and “nodding”¹⁹ down about 1 cm. The survey responses to Question 15 provided definite guidelines of: minimum 2 cm; ½ inch; around 1 inch; a few mm to 1 cm, and also suggestions such as “enough space for the head movements to be flexible and free;” or “small amount of room.” Therefore, both the precise measurements and the other suggestions are fairly consistent with the recommendations provided in the sources (consistency was also noted within the literature).

Therefore, with regard to customization of specific support devices (i.e. chin rest; shoulder rest), in the literature there was a great variety of specific strategies and techniques. Generally speaking, the survey answers show the respondents’ awareness of these aspects, which for me was somewhat unexpected, and is a positive sign of concern about these issues in the string world.

Question 17 addressed the basis of the respondents’ conclusions regarding instrument support. In the literature review, authors such as Lieberman cautioned string players against basing their choices regarding support on stigma, or the opinion of a pedagogue who recommends a certain approach (i.e. not using a shoulder rest) as a general rule, without checking if that particular approach fits the student’s body type.²⁰ The answers showed a preponderance of the respondents’ own experience (as performers and teachers) as the basis for their conclusions regarding instrument support. The low number of responses allotted to the choices of research evidence and expert opinion might indicate that this type of knowledge is not easily accessible to the respondents. This idea was also mentioned in the statement of the

¹⁸ Julie Lyonn Lieberman, “The Importance of Setup,” *Strings* 86 (May/June 2000): 40.

¹⁹ Malva Freymuth, “Give Your Students Security and Comfort: Custom Fit their Shoulder Pads and Chinrests,” *American Suzuki Journal* 30 (2002): 62.

²⁰ Lieberman, *Violin and Viola Ergonomics*.

problem in Chapter 1: information about customizing instrument support (based, among other aspects, on research evidence and expert opinion) is found in a scattered array of materials, and it is not addressed at great length in sources such as textbooks for music educators. Therefore, it seems important that knowledge of research evidence and expert opinion become available to string players on a larger scale. The present study will hopefully be a step in the direction of accomplishing this goal, since its first purpose (bringing together this scattered array of information) involved presenting information from these types of sources (research-based, and based on expert opinion), among other types of sources, in Chapter 2. By achieving this purpose, the monograph will hopefully be helpful to performers and teachers of upper string instruments, because it will enable them to have access to this information.

Conclusions

The first purpose of this monograph was to bring together a scattered array of pedagogic, research-based, and anecdotal literature and other materials about performance injury derived from detrimental support into one source; and to organize and synthesize this literature on violin/viola support with the intention of identifying principal issues. Furthermore, I sought to compare the coverage and recommendations within the three aforementioned literature types, revealing consistencies and inconsistencies. The second purpose of this monograph was to assess the perception of college-level violin and viola pedagogues, teachers of pre-college string students, and college-level violin and viola students, about injury prevention by customizing support, and to gain an insight into the strategies they use. I sought to answer the following research question: how do the perceptions of upper string performers, teachers, and college students compare to the findings gleaned from the literature? The major findings of the study are listed below.

1. Therefore, the answer to the research question is that overall, these perceptions are fairly consistent with the findings gleaned from the literature review, with a few differences, which will be listed further. Generally speaking, there was more agreement than I anticipated; thus, the magnitude of the problem is seemingly not as great as it was expected, and my preconceived notion of more disagreement was not confirmed. So, I started this process with some assumptions (I thought many respondents were unaware of customization strategies), then I asked questions (through the survey) and I found out my assumptions were incorrect in some places (since generally there is more agreement). Now, since the findings of this monograph show that my initial assumptions were mostly incorrect, a different question arises based on these findings. Generally, due to the self-report basis of surveys, it cannot be determined if what the respondents say they do or believe is actually evident in their behavior (in the case of this survey, the lessons taught by the respondents, or the application of their reported beliefs to their personal practice). Therefore, it seems logical to ask the following question: are the respondents actually using this information in personal practice and in their teaching of students? This aspect will also be addressed in the next section of this chapter, “Weaknesses of the Study.”

2. While most of the sources in the literature review contended that the jaw, as opposed to the chin itself, should be placed in the chin rest, the majority of the college students chose an option involving the use of the chin for instrument support. Therefore, it can be concluded that college students might benefit from more information about the placement of the jaw, as opposed to the chin itself, in the chin rest. However, the disagreement could have been a result of misunderstanding the wording used in the choices: respondents could have not understood that by “chin,” only the pointed end of the chin was meant (as opposed to the jaw).

3. While most sources in the literature mentioned that a position involving rotation and nodding of the head is less detrimental than tilting (bending the neck laterally), in the survey, college students and teachers of pre-college favored a head position involving tilting. Therefore, it can be concluded that awareness of the detrimental effects of a tilted head posture should be increased for the groups of college students and teachers of pre-college.

4. While in the literature the majority of sources addressing the habit of watching the left hand (while playing) deemed it unnecessary and even detrimental, among the answers of college students, this aspect emerged as a goal of head positioning. Therefore, college students might benefit from more information about the negative implications associated with watching the left hand.

5. In the literature, sources addressing the customization of instrument placement on the vertical plane mentioned starting either with the shoulder rest, or with the chin rest, to determine this placement; the options were approximately evenly divided between these two approaches. In the survey, the number of respondents who chose the approach of starting with the shoulder rest (as opposed to the chin rest) might be lower than the number of those who start this customization procedure by determining the chin rest. This aspect was not deemed negative, since both approaches seem to be valid, as long as they are justified by arguments taking into account the player's physical well-being.

6. Generally, knowledge of research evidence and expert opinion regarding instrument support needs to be available on a larger scale, which is reflected in the purpose of the present study by presenting both of these source types in the literature review section.

Weaknesses of the Study

As stated previously, one weakness of this study is inherent to the research method of survey: due to the self-report basis of the survey, it cannot be determined whether the respondents are actually applying their beliefs and knowledge about customization strategies, implied in their survey answers, to personal practice and to their teaching of students.

Moreover, partly in an attempt to keep the survey from being unduly long, and partly because I did not think of including certain details in the survey, in hindsight, I wish I would have asked a few more questions. One of them pertains to instrument positioning; I would have been interested in investigating the respondents' beliefs about leaving space between the instrument's base and the player's neck. Prior to my injury, I sometimes felt uncomfortable while playing, because my violin was pressing on my throat; when I mentioned this to a fellow performer and teacher, she suggested that there always should be a little space between instrument and the player's neck. However, after I sent out the survey, I encountered this aspect in various sources, which advised against leaving a "gap"²¹ between the instrument's base and the player's neck, since this causes unnecessary pressure of the head on the chin rest, thus resulting in tension in the shoulders and neck. Therefore, it might be concluded that my discomfort was not caused by the instrument placement close to my neck, but possibly from pushing the violin against the neck with my left arm.

Another aspect that seemed interesting (and was left out from the survey for the same reasons) was an exercise recommended by many teachers of beginning students, to reinforce instrument positioning: holding the instrument without any involvement of the left hand (which

²¹ Simon Fischer, "Holding the Violin," *Strad* 116, no. 1381 (May 2005): 79.

is placed on the right shoulder, or at the student's side); the scroll is supposed to stay at the level that is desired when playing (i.e. parallel to the floor). Sometimes, the students are even asked to walk around the room with the instrument positioned in this manner. I used this exercise countless times with my beginning students; however, in the light of the views stated by various authors, it seems that it can result in unnecessary tension in the neck muscles, affecting the balance of the entire body.²² The exercise clearly reinforces the *diving board* approach; therefore, the authors advising against it are those advocating the *bridge* approach. Menuhin, a proponent of the latter approach, used this exercise; however, he stated that the scroll should be pointing towards the floor when the left hand does not support the instrument.²³ The commonly held belief about this exercise is that it teaches young children to use their neck muscles, which does not feel natural to them since it is not common for everyday activities. However, thinking about the Alexander Technique principle of supporting the instrument by releasing head weight rather than by muscular effort from the neck,²⁴ it seems unnecessary to teach children to *use* their neck muscles; Menuhin's version of this exercise might be considered a means of teaching students to release head weight (which also seems to be uncommon for everyday activities). It seems that teachers who use this exercise should be aware of whether they endorse the *bridge* or the *diving board* approach, and if the latter is chosen, students should be closely monitored for tension in the neck and shoulders when performing this exercise.

²² Dominique Hoppenot, *Le violon intérieur* [The violin within] (Paris: Editions Van de Velde, 1981), 54.

²³ Yehudi Menuhin, *The Compleat Violinist* (New York: Summit Books, 1986), 113-17.

²⁴ Conable and Conable, 132.

CHAPTER 5 RECOMMENDATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

Recommendations

As stated in the “Conclusions” section of the previous chapter, knowledge of the listed details needs to become available on a larger scale, among college professors, teachers at the pre-college level, and college students of upper string instruments, so that the likelihood of injury prevention can be maximized. To achieve this goal, it seems that it would be beneficial for college students to attend classes where specific information about performance injury prevention is presented; I am aware of such a class taught by a medical specialist and string performer, at a university in Europe. However, such classes are not offered at many universities. Considering the difficulty of adding a class to the existing curriculum of a degree program (due to reasons such as financial considerations), a solution to this problem would be that college professors of upper string instruments invite specialists (such as medical practitioners, string performers or pedagogues, or injury prevention advocates) to teach master classes or seminars about performance injury prevention. This seems to be a more widespread practice for summer music festivals than for universities, but not all the students are likely to attend these summer events.

Alexander Technique classes, and possibly other classes addressing movement and functioning of the human body, also seem to be beneficial for accomplishing the goal of disseminating knowledge related to performance injury prevention. These classes are more commonly offered at universities than classes mentioned in the previous paragraph; however, it seems that, for the most cases, they are electives, as opposed to being required for degrees of music performance or music education. Therefore, a possible solution to the problem of knowledge about performance injury prevention needing to be disseminated on a larger scale is

that these classes (i.e. Alexander Technique classes) be required for students majoring in music performance or music education. Moreover, the training of string players and teachers should include field experiences that expose setup challenges among a variety of student musicians—challenges that might require astute observation, critical thinking, and problem solving.

When studying the website of the Alexander Technique project conducted by Taylor, my thoughts were that most upper string teachers do not have the luxury of working on a long-term basis with an Alexander Technique specialist and a luthier who can carve customized chin rests; moreover, financial considerations prevent access to the wealth of materials (i.e. shoulder rest substitutes, or the *Chin Rest Testing Kit*)¹ that was available for this research project. Therefore, one of the recommendations of this study is that college professors become aware of these possibilities and advocate for funding pilot projects such as this, at least moving in the direction of this level of detail (since it seems difficult to create conditions such as maintaining the project for the duration of a full academic year, or booking a luthier to carve many versions of a chin rest until deciding upon the final one).

The literature sources featured different procedures of customizing the instrument placement on the vertical plane: starting with determining the shoulder rest, and starting with determining the chin rest. Survey responses indicate that upper string performers and teachers who apply the former procedure might be fewer than those applying the latter. Both approaches seem to be valid, and it seems that upper string players should become aware of all these possibilities of customizing the instrument placement on the vertical plane (and also on the other

¹ Faculty of Music (HKU), “Violinist in Balance,” 2005, accessed December 10, 2013, www.violinistinbalance.nl.

planes of placement discussed in Chapters 2 and 4), so that they can make an informed choice of one of these procedures.

As stated in Chapter 1, it seems that the common practice of selling chin rests together with the instrument might contribute to the problem of string players or teachers accepting the chin rest that “came with the instrument.”² I agree with Dinwiddie, who stated that string teachers might be uncomfortable to recommend a fairly expensive shoulder rest to their beginning students;³ I have the same opinion about advising my students to purchase a different chin rest than the one provided with the violin. Therefore, it seems that the idea of not including chin rests with the instruments would cause students to go through a process of trying different chin rest models, before deciding on the best choice for their body type. Personnel at violin shops should ideally be trained with regard to helping their customers in this decision; alternatively, the student’s teacher could provide this help. Moreover, it would be beneficial if the practice of custom-making chinrests, mentioned in the sources, were available on a larger scale, such as implied by Benham in his article (which was presented in Chapter 1). It seems that *The Frisch and Denig Violin and Viola Chinrest Fitting System*⁴ is an important step in this direction, since a wide range of possibilities is offered by combining the various *toppers* with the *lifts* of different heights and by the possibility of positioning the chin rests in two different places in relation to the tailpiece. A high chin rest might create the problem of the instrument not fitting in the case,

² Lynne Denig, “Chin Rests-Small Accessories That Can Make a Big Difference,” *Strings*, 1 November 2010, accessed March 6, 2014, <http://global.factiva.com.libezp.lib.lsu.edu/ha/default.aspx>.

³ Liz Dinwiddie, “Set-up: Fitting the Instrument to the Body, When All Bodies Are Different!,” *American String Teacher* 57, no. 3 (August 2007): 39.

⁴ Frisch and Denig, “Violin and Viola Chinrest Fitting System,” Jonas Music Services, 2012, accessed March 14, 2014, www.chinrests.com.

due to the added height; thus, some players might consider this cumbersome, since a chin rest is more difficult to remove from, and place back on the instrument in a timely manner, than a shoulder rest. Therefore, the solution proposed by Norris might be helpful: he advised including a dovetail joint at the base of a high chin rest, so that it can be easily removed from the instrument.⁵

With regard to the difficulties that teachers encounter when trying to impart the type of individual attention that is required in injury prevention and equipment customization in large group string teaching, it seems that these teachers need to become aware of customization strategies, and to be creative in developing strategies of addressing these issues despite the time constraints and the numerous aspects they need to address simultaneously. Spending time with individual students before or after class (or during lunch break) if feasible, and taking the time to observe their body build and try different models of chin rests and/or shoulder rests would be a possible solution. Another possible strategy would be to become familiar with the customization process outlined by Denig and Frisch, which, according to the authors, should take about one minute for determining the optimal instrument placement for each student.⁶ This process could be carried out with a certain student, while the rest of the class could be engaged in a small group activity such as *Think, Pair, Share*, or completing a music theory worksheet. In classes where misbehavior is a potential problem, it is crucial that the teacher has a very good knowledge of the customization procedure, so that it takes as little time as possible. Moreover, the strategies suggested by Dearborn seem to be effective. One of these strategies implies the students

⁵ Richard Norris, *The Musician's Survival Manual: A Guide to Preventing and Treating Injuries in Instrumentalists*, Third printing (San Antonio, TX: Crumrine Printers, 1997), 23.

⁶ Lynne Denig and Gary Frisch, "Chin Rest Choice Based on Jaw Type," *American String Teacher* 57, no. 1 (February 2007): 49-50.

switching instruments during rehearsals, so that within a certain section of the orchestra (i.e. the viola section) every student has a chance to try out every peer's equipment.⁷ It seems that this solution would work well, except for the limitations of the student not being able to try the equipment on his/her own instrument (which might result in a difference compared to the fellow student's instrument) and some students desiring to purchase a certain support device only because of the motivation of emulating certain peers (i.e. who can afford a more expensive shoulder rest). Another valid solution to the problem of customization in large group setting, proposed by Dearborn, is to create a device made of a dowel (of the length of an upper string instrument) and several wood blocks (shaped as the bottom of a violin/viola), to which a chin rest and a shoulder rest could be attached.⁸ The teacher could have several such devices in the classroom, and attach a different chin rest model to each, so that the difficulty of removing chin rests from, and placing them back on the instrument in a timely manner, is eliminated (shoulder rests can be attached and removed more quickly than chin rests). This way, students could try several combinations of shoulder rests and chin rests.

One of the detailed answers for the survey implied that teaching a balanced posture and instrument positioning is "the most crucial, difficult, and elusive part of violin pedagogy." I tend to agree with this opinion, judging by the amount of time I spend in my lessons trying to figure out what can be improved with regard to my students' manner of supporting their violins, and experimenting with different possibilities. Therefore, I hope that the present monograph will be helpful to fellow teachers and performers by enabling them to have access to all these

⁷ Norman Dearborn, "String Clinic: Chinrests and Shoulder Pads," *Instrumentalist* 23, no. 4 (November 1968): 77.

⁸ *Ibid.*, 76.

possibilities, presented in the literature and in the survey responses. Moreover, my hope is that this monograph will contribute in minimizing the likelihood of injury, so that upper string players possibly become less likely to experience pain, frustration, and all the other deleterious effects of performance injury, and more likely to express their musical potential at its fullest, through a tension-free playing technique.

Suggestions for Future Research

As stated in the last section of Chapter 4, one of the weaknesses of this study was inherent to the self-reporting basis of the survey research method. Therefore, a future study, which might clarify in more detail the extent to which the respondents' knowledge and beliefs are used in personal practice and in the teaching of students, could be devised so that it would answer the research question "What do performers, pedagogues, and students of upper string instruments actually do to promote injury prevention by customizing support for their students and/or for themselves?" The method of collecting information would be observation of their lessons or practice sessions, which would make the study empirical (like this monograph); however, the likelihood of assessing the practical application of the knowledge and beliefs of performers, teachers, and students would be increased, in comparison to the present study. Therefore, the potential study would be a step ahead of this monograph, in the direction of minimizing the likelihood of performance injury derived from detrimental support for upper string instruments.

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APPENDIX 1
IRB OPINION ON EXEMPTION FROM OVERSIGHT



April 22, 2014

To: Gary Byerly
Dean of the Graduate School
Louisiana State University

Through Matthew Lee
Associate Vice Chancellor

Last week I was informed that a graduate student, Emanuela Lacaru, in the Department of Music defended her thesis or dissertation but never went through the IRB. His graduate advisor is Epsen Lilleslatten.

I received this week her materials that should have been submitted to the IRB before data collection. I told her it is not possible for the IRB to give retroactive approval to a study. However, I would review her project and send my recommendations to you.

Mrs. Lacaru's study involved a survey on how musicians hold their instruments. Her survey does not cover any sensitive questions. Her sample does not include any vulnerable people. She obtained consent from her participants through emails, but did not obtain signed consent. These procedures would be allowed under IRB rules if she had applied for an exemption. Had she applied for an exemption, it would have been granted.

I found no evidence that she harmed anyone in his study.

In summary, I believe that, while putting LSU in jeopardy of federal audits by violating LSU policy on the use of human subjects, she did no harm to any of his participants.

Sincerely,

A handwritten signature in blue ink, which appears to read "Robert C. Mathews", is written over a light blue horizontal line.

Robert C. Mathews,

Chair LSU Institutional Review Board

APPENDIX 2

SURVEY QUESTIONS

Please answer the following questions with regard to your current or past teaching situations. If you never have taught students, all the questions apply to yourself.

1. In your opinion, the instrument should be supported:

- A. Like a “diving board” (Paul Rolland’s description of supporting only between head and shoulder/collarbone)
- B. Like a “bridge” (Rolland’s description of supporting both like mentioned above, and by the left hand)
- C. With a shoulder rest
- D. Other (please explain)

2. Thinking very precisely about supporting the instrument at its endpin side, you consider the support points to be:

- A. Jaw and collarbone
- B. Chin and collarbone
- C. Jaw and shoulder
- D. Chin and shoulder
- E. Other (please explain)

3. You advise your students to:

- A. Keep the same balance point(s) of support for the entire time of playing
- B. Alternate between balance points of support according to the demands of the music played

4. When addressing the position of the head, your goal is to:

- A. Position the head completely straight and facing forward, with the neck in a neutral position
- B. Nod down onto the instrument
- C. Rotate the head to the left
- D. Tilt the head to the left (bending the neck to the side)
- E. A combination of B, C, and/or D (please explain)

5. The position of the head should:

- A. Be the same for the entire time of playing
- B. Change during playing, according to the demands of the repertoire

6. The scroll should be placed:

- A. Parallel to the floor
- B. Pointing towards the ceiling
- C. Pointing towards the floor
- D. This angle should vary according to the technical skills involved/Other (please explain)

7. To decide if the instrument should be angled more in front of the player, or farther out to the left, you take into account:

- A. Arm length
- B. Enabling the player to bow comfortably at the frog
- C. Enabling the comfortable positioning of the left arm
- D. An unstrained perpendicular bow/instrument position when approximately in the middle of the bow
- E. Some/all of the above, or other (please explain)

8. The instrument should be:

- A. Tilted to the right (the E-string side closer to floor than the G-String side)
- B. Flat (all the strings level)
- C. Alternating between these two angles according to the demands of the repertoire

9. Which of the following devices do you recommend to your students for instrument support?

- A. Chin rest
- B. Shoulder rest (or some other materials underneath the instrument)
- C. Both of the above
- D. None of the above (please explain the reasons for your choice)

10. If you have a preference for one of these support types, what are the reasons for your choice?

Note: If you answered D in Question 9, please skip to Question 16.

- A. Student's body type
- B. Influence on the sound of the instrument
- C. Appearance
- D. Some/all of the above/Other (please explain)

11. If your answer to Question 9 was A or C, and you have a preference for a certain type of chin rest, it is based on the following reason:

- A. Material it is made of (please explain)
- B. Brand (please explain)
- C. Shape (please explain)
- D. Some/all of the above (please explain)
- E. Other (please explain)

Note: For this question, respondents were asked to type their choice and explanation in a text box.

12. If your answer to Question 9 was B or C, and you have a preference for a certain type of shoulder rest/other support device underneath the instrument, it is based on the following reason:

- A. Material it is made of (please explain)
- B. Brand (please explain)
- C. Shape (please explain)
- D. Some/all of the above (please explain)
- E. Other (please explain)

Note: For this question, respondents were asked to type their choice and explanation in a text box.

13. When a student experiences discomfort due to the manner of supporting his/her instrument, you suggest:

- A. Changing the chin rest
- B. Modifying the current chin rest (please explain)
- C. Changing the shoulder rest (or another device placed under the instrument)
- D. Modifying/adjusting the current shoulder rest (please explain)
- E. Other (please explain)

Note: For this question, respondents were asked to type their choice and explanation (if required) in a text box.

14. To fill the space between chin/jaw and collarbone/shoulder, you prefer to build up:

- A. The chin rest
- B. The shoulder rest (or other device placed under the instrument)
- C. Both of the above

15. When building up those devices, your goal is to:

- A. Fill the entire space between chin/jaw and collarbone/shoulder
- B. Leave some room for head nodding on the chin rest (please specify about how much)
- C. Other (please explain)

Note: For this question, respondents were asked to type their choice and explanation (if required) in a text box.

16. In your opinion, the manner of supporting the instrument influences the following aspects of playing:

- A. Left-hand mobility (please explain)
- B. Thumb position (please explain)
- C. Vibrato (please explain)
- D. Some/all of the above (please explain)
- E. Other (please explain)

Note: For this question, respondents were asked to type their choice and explanation in a text box.

17. Regarding instrument support, body posture and positioning, what is the basis for your conclusions? Choose the **primary** basis.

- A. Expert opinion
- B. Research evidence
- C. My own experience as a performer and teacher
- D. How I was taught
- E. Other

VITA

A native of Bucharest, Romania, Emanuela Maria Lacraru holds a Bachelor's Degree in Violin Performance from the National University of Music from her hometown. She earned her Master's Degree in Violin Performance from Southeastern Louisiana University, and she also has a Master's Degree in Music Theory and Composition from West Chester University of Pennsylvania. In 2007, she was accepted at Louisiana State University as a Doctoral candidate in Violin Performance, with a minor in Music Education. Along with pursuing graduate studies, she is also working towards an Alternate Certification program for Instrumental K-12 teaching, and a Gifted and Talented Education certification program.

As an orchestral violinist, Ms. Lacraru has performed with various orchestras, such as the Baton Rouge Symphony Orchestra, the Acadiana Symphony Orchestra, and the Rapides Symphony Orchestra, where she has held the position of principal second violin. Her performances as a chamber musician include recitals with the Liric Quartet, and she also has performed as a soloist with the Southeastern Louisiana University Chamber Orchestra. Since 2003, upon moving to the United States, Emanuela has been teaching violin to students of various ability levels and of ages, ranging from preschool students to senior adults, in the settings of private instruction and group lessons. She is committed to helping students find enjoyment in playing the violin and express their musical potential at its fullest, through a tension-free playing technique.